



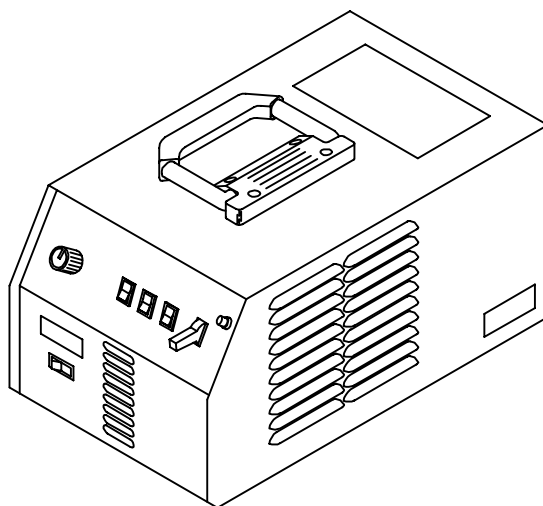
Miller®

March 1993

Form: OM-207

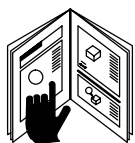
Effective With Serial No. KD400224

OWNER'S MANUAL



Maxstar™ 91

- CC/DC Welding Power Source
- For GTAW Welding
- 90 Amperes, 14 Volts DC At 20% Duty Cycle
- Uses Single-Phase Input Power
- Thermostat Protection Against Overheating
- Touch Start For GTAW Welding
- 14-Pin Remote Control Receptacle



- Read and follow these instructions and all safety blocks carefully.
- Have only trained and qualified persons install, operate, or service this unit.
- Call your distributor if you do not understand the directions.



- Give this manual to the operator.



- For help, call your distributor
- or: MILLER ELECTRIC Mfg. Co., P.O. Box 1079, Appleton, WI 54912 414-734-9821

MILLER'S TRUE BLUE™ LIMITED WARRANTY

Effective January 1, 1992
(Equipment with a serial number preface of "KC" or newer)

This limited warranty supersedes all previous MILLER warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY - Subject to the terms and conditions below, MILLER Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new MILLER equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by MILLER. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, MILLER will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. MILLER must be notified in writing within thirty (30) days of such defect or failure, at which time MILLER will provide instructions on the warranty claim procedures to be followed.

MILLER shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser and are as follows:

1. 5 Years - Parts - 3 Years - Labor
 - * Original main power rectifiers
2. 3 Years - Parts and Labor
 - * Transformer/Rectifier Power Sources
 - * Plasma Arc Cutting Power Sources
 - * Semi-Automatic and Automatic Wire Feeders
 - * Robots
3. 2 Years - Parts and Labor
 - * Engine Driven Welding Generators:
(NOTE: Engines are warranted separately by the engine manufacturer.)
4. 1 Year - Parts and Labor
 - * Motor Driven Guns
 - * Process Controllers
 - * Water Coolant Systems
 - * HF Units
 - * Grids
 - * Spot Welders
 - * Load Banks
 - * SDX Transformers
 - * Running Gear/Trailers
 - * Field Options

(NOTE: Field options are covered under True Blue™ for the remaining warranty period of the product they are installed in, or for a minimum of one year - whichever is greater.)
5. 6 Months - Batteries
6. 90 Days - Parts and Labor
 - * MIG Guns/TIG Torches
 - * Plasma Cutting Torches
 - * Remote Controls

- * Accessory Kits
- * Replacement Parts

MILLER'S True Blue™ Limited Warranty shall not apply to:

1. Items furnished by MILLER, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
2. Consumable components, such as contact tips, cutting nozzles, contactors and relays.
3. Equipment that has been modified by any party other than MILLER, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at MILLER'S option: (1) repair, or (2) replacement, or, where authorized in writing by MILLER in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized MILLER service station, or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. MILLER'S option of repair or replacement will be F.O.B. Factory at Appleton, Wisconsin, or F.O.B. at a MILLER authorized service facility as determined by MILLER. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTEE OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT, TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OR TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

RECEIVING-HANDLING

Before unpacking equipment, check carton for any damage that may have occurred during shipment. File any claims for loss or damage with the delivering carrier. Assistance for filing or settling claims may be obtained from distributor and/or equipment manufacturer's Transportation Department.

When requesting information about this equipment, always provide Model Designation and Serial or Style Number.

Use the following spaces to record Model Designation and Serial or Style Number of your unit. The information is located on the rating label or nameplate.

Model _____

Serial or Style No. _____

Date of Purchase _____

ERRATA SHEET

September 20, 1993

FORM: OM-207

Use above FORM number when ordering extra manuals.

After this manual was printed, refinements in equipment design occurred. This sheet lists exceptions to data appearing later in this manual.

CHANGES TO SECTION 7 – TUNGSTEN ELECTRODE

Delete entire SECTION 7 – TUNGSTEN ELECTRODE. This information is found in SECTION 7 – GTAW METHODS, which is the correct Section 7.

CHANGES TO SECTION 8 – PARTS LIST

Change Parts List as follows:

| ** | Dia. Mkgs. | Part No. | Replaced With | Description | Quantity |
|-------|---------------|-------------|------------------|---|----------|
| 23-21 | | 111 443 | 165 377 | BUSHING, strain relief .240/.510 ID x .750/.875mtg hole (Eff w/KD494695) | 1 |
| 23-22 | | 156 480 | 165 378 | CASE SECTION, bottom/rear (Eff w/KD494695) | 1 |
| 25-13 | .. PC2 | .. 155 863 | 162 956 | CIRCUIT CARD, interconnecting (Eff w/KD436311) | 1 |

**First digit represents page no – digits following dash represent item no.

BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

ARC WELDING SAFETY PRECAUTIONS



WARNING

ARC WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR.

In welding, as in most jobs, exposure to certain hazards occurs. Welding is safe when precautions are taken. The safety information given below is only a summary of the more complete safety information that will be found in the Safety Standards listed on the next page. Read and follow all Safety Standards.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.



ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment.

5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. When making input connections, attach proper grounding conductor first.
7. Turn off all equipment when not in use.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode if in contact with the work or ground.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. Wear a safety harness if working above floor level.
14. Keep all panels and covers securely in place.



ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

NOISE

1. Use approved ear plugs or ear muffs if noise level is high.

ARC RAYS

2. Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
3. Wear approved safety glasses. Side shields recommended.
4. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
5. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.



FUMES AND GASES can be hazardous to your health.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breathe the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, and cleaners.

5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.



WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.

5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
11. Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.



FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.

**CYLINDERS can explode if damaged.**

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.

3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

**WARNING****ENGINES can be hazardous.****ENGINE EXHAUST GASES can kill.**

Engines produce harmful exhaust gases.

1. Use equipment outside in open, well-ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.

**ENGINE FUEL can cause fire or explosion.**

Engine fuel is highly flammable.

1. Stop engine before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.
3. Allow engine to cool before fueling. If possible, check and add fuel to cold engine before beginning job.
4. Do not overfill tank – allow room for fuel to expand.
5. Do not spill fuel. If fuel is spilled, clean up before starting engine.

**MOVING PARTS can cause injury.**

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.

3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

**SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.**

Batteries contain acid and generate explosive gases.

1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.
5. Observe correct polarity (+ and -) on batteries.

**STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.**

The coolant in the radiator can be very hot and under pressure.

1. Do not remove radiator cap when engine is hot. Allow engine to cool.
2. Wear gloves and put a rag over cap area when removing cap.
3. Allow pressure to escape before completely removing cap.

PRINCIPAL SAFETY STANDARDS

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices For Occupation And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

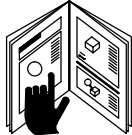
Cutting And Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

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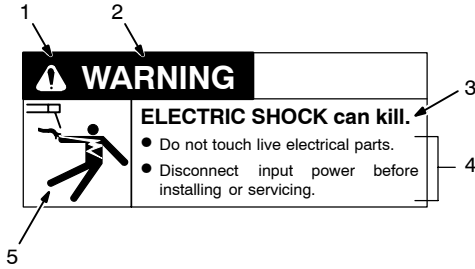
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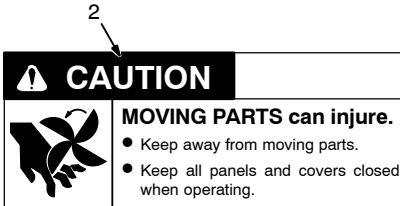
SECTION 1 – SAFETY INFORMATION


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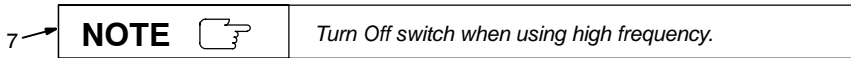


- Read all safety messages throughout this manual.
- Obey all safety messages to avoid injury.
- Learn the meaning of WARNING and CAUTION.









1 Safety Alert Symbol

2 Signal Word

WARNING means possible death or serious injury can happen.

CAUTION means possible minor injury or equipment damage can happen.

3 Statement Of Hazard And Result

4 Safety Instructions To Avoid Hazard

5 Hazard Symbol (If Available)

6 Safety Banner

Read safety blocks for each symbol shown.

7 NOTE

Special instructions for best operation – not related to safety.

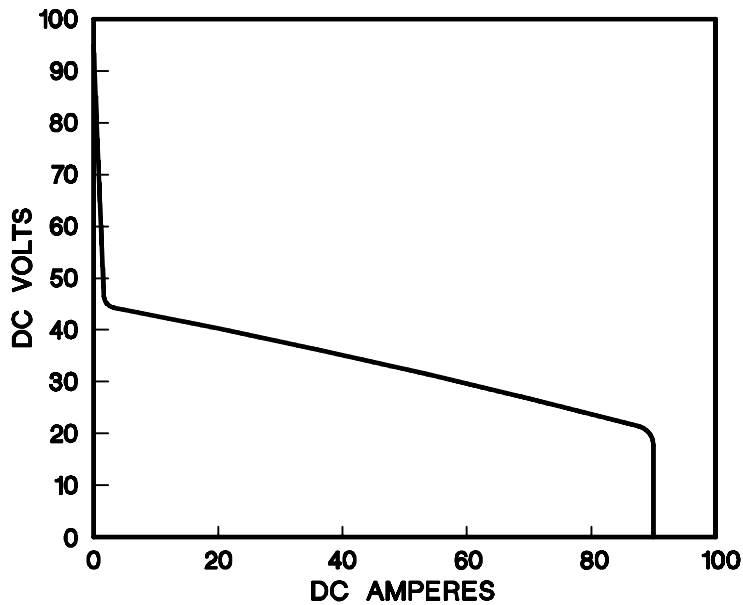
Figure 1-1. Safety Information

SECTION 2 – SPECIFICATIONS

Table 2-1. Welding Power Source

| Specification | Description |
|-------------------------------|---|
| Type Of Output | Constant Current (CC), Direct Current (DC) |
| Rated Weld Output | 90 Amperes, 14 Volts DC at 20% Duty Cycle (See Section 2-2) |
| Type Of Input Power | 115 Volts AC; 50/60 Hz; Single-Phase |
| Input Amperes At Rated Output | 19.5 Amperes |
| KVA/KW Used At Rated Output | 2.2 kVA/1.5 kW |
| Amperage Range | Min. - 90 A |
| Max. Open-Circuit Voltage | 95 Volts DC |
| Welding Processes | Gas Tungsten Arc Welding (GTAW) |
| Input Power Cord | 7 ft (2.1 m) |
| Overall Dimensions | Length: 16-1/2 in (419 mm); Width: 9-1/2 in (241 mm); Height: 8 in (203 mm) |
| Weight | Net: 31 lb (14 kg); Ship: 35 lb (16 kg) |
| Options | See Rear Cover |

2-1. Volt-Ampere Curves



The volt-ampere curves show the minimum and maximum voltage and amperage output capabilities of the welding power source. Curves of other settings fall between the curves shown.

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Figure 2-1. Volt-Ampere Curves

2-2. Duty Cycle

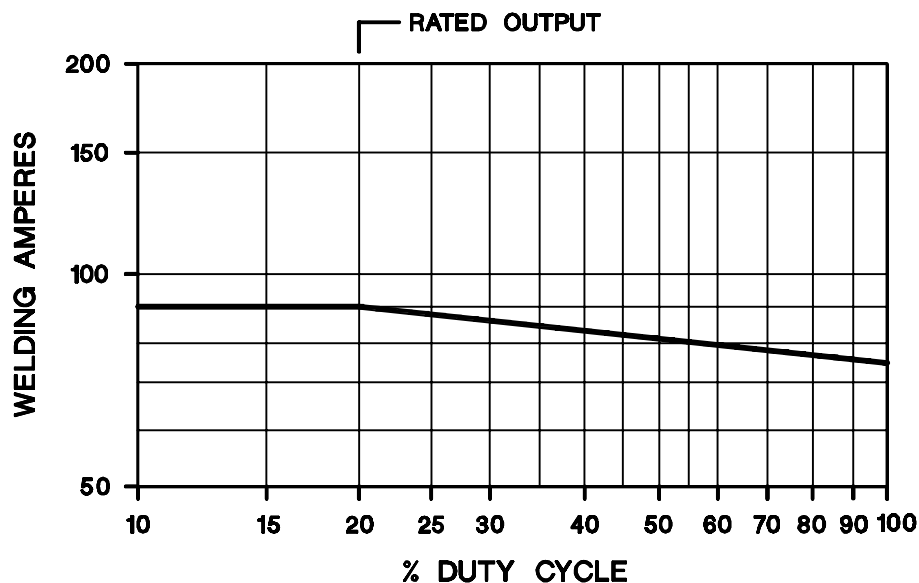


CAUTION

EXCEEDING DUTY CYCLE RATINGS will damage unit.

- Do not exceed indicated duty cycles.

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Duty cycle is how long the unit can operate within a ten minute period without causing overheating or damage.

This unit is rated at 20% duty cycle allowing welding 2 minutes out of every 10 minutes at rated load. If the welding amperes decrease, the duty cycle increases.

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Figure 2-2. Duty Cycle Chart

SECTION 3 – INSTALLATION

3-1. Typical Process Connections

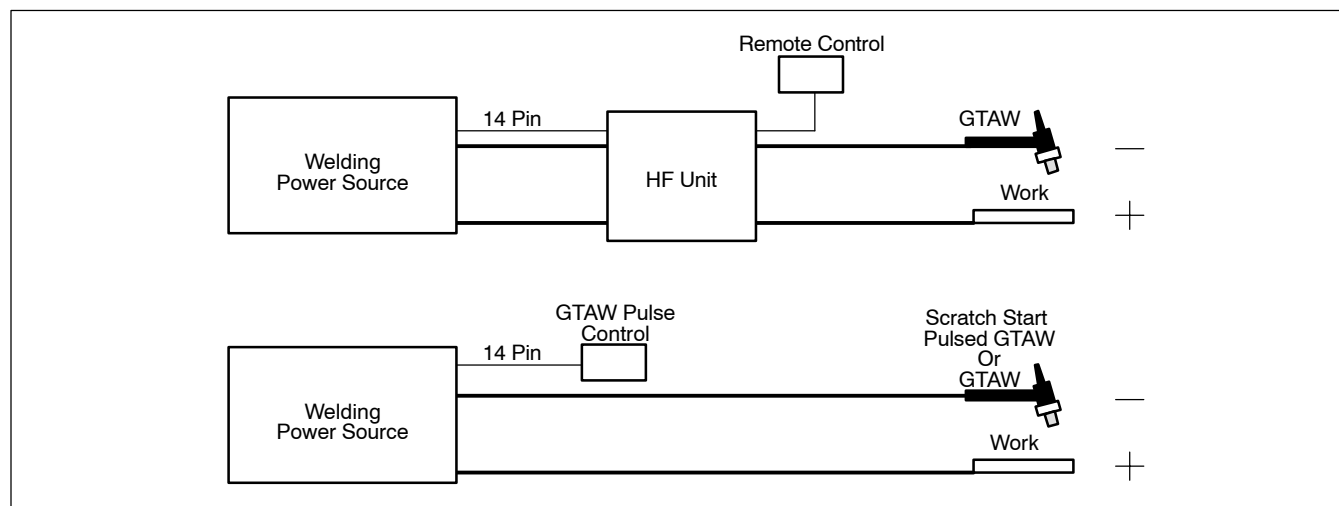




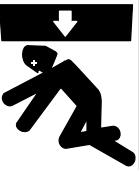


Figure 3-1. Typical Process Connections

3-2. Selecting A Location And Moving Welding Power Source

|  WARNING | |
|---|---|
|  <p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> Do not touch live electrical parts. Disconnect input power conductors from deenergized supply line BEFORE moving welding power source. |  <p>FUMES can be hazardous; LACK OF FRESH AIR AND PROPER VENTILATION can be harmful.</p> <ul style="list-style-type: none"> Do not breathe welding fumes. Place unit only where there is a good fresh air supply and proper ventilation. |
|  <p>FIRE OR EXPLOSION can result from placing unit on, over, or near combustible surfaces.</p> <ul style="list-style-type: none"> Do not locate unit on, over, or near combustible surfaces. Do not install unit near flammables. |  <p>FALLING EQUIPMENT can cause serious personal injury and equipment damage.</p> <ul style="list-style-type: none"> Use handle to lift unit. Have person of adequate physical strength lift unit. Move unit with hand cart or similar device. |
| <p>BLOCKED AIRFLOW causes overheating and possible damage to unit.</p> <ul style="list-style-type: none"> Do not block or filter airflow. <p>Warranty is void if any type of filter is used.</p> | <p style="text-align: right;">swarn11.1* 2/92</p> |

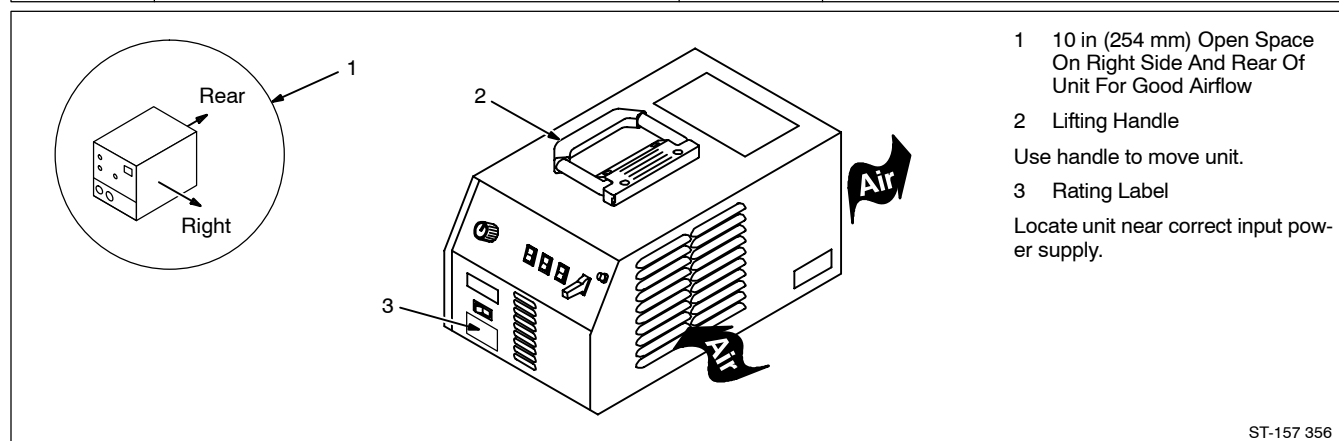


Figure 3-2. Location And Movement Of Welding Power Source

Table 3-1. Weld Cable Size*

| Welding Amperes | Total Cable (Copper) Length In Weld Circuit Not Exceeding | | | | | | | |
|-----------------|---|-------------------------|-------------------------|---------------|---------------|---------------|----------------|----------------|
| | 100 ft (30 m) Or Less | | 150 ft (45 m) | 200 ft (60 m) | 250 ft (70 m) | 300 ft (90 m) | 350 ft (105 m) | 400 ft (120 m) |
| | 10 To 60% Duty Cycle | 60 Thru 100% Duty Cycle | 10 Thru 100% Duty Cycle | | | | | |
| 100 | 4 | 4 | 4 | 3 | 2 | 1 | 1/0 | 1/0 |
| 150 | 3 | 3 | 2 | 1 | 1/0 | 2/0 | 3/0 | 3/0 |
| 200 | 3 | 2 | 1 | 1/0 | 2/0 | 3/0 | 4/0 | 4/0 |

*Weld cable size (AWG) is based on either a 4 volts or less drop or a current density of not more than 300 circular mils per ampere.

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3-3. Selecting And Preparing Weld Output Cables

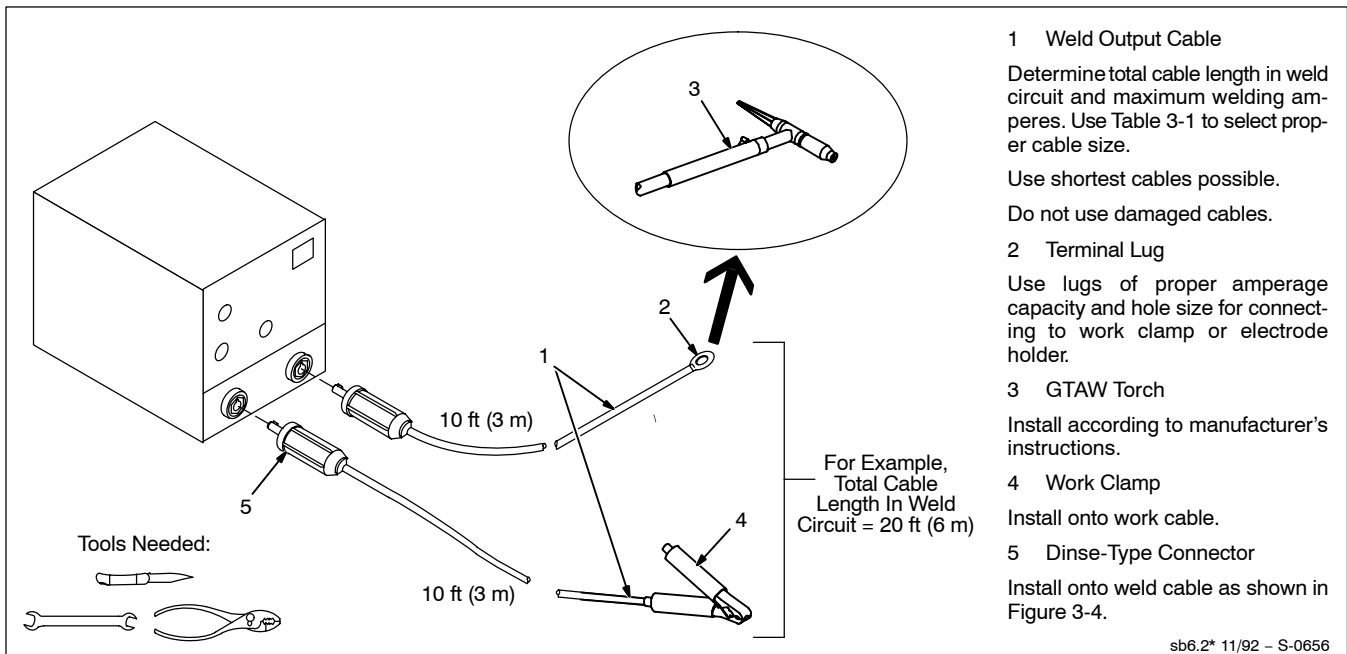


Figure 3-3. Selecting And Preparing Weld Output Cables

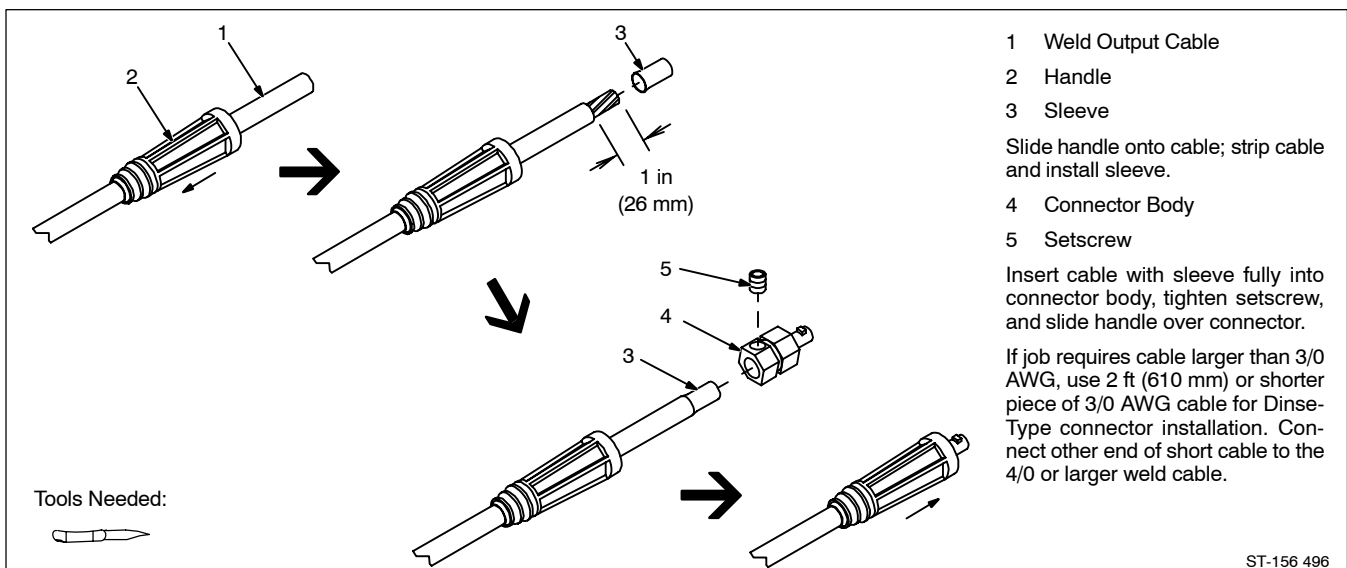


Figure 3-4. Dinse-Type Connector Assembly

3-4. Connecting To Weld Output Receptacles

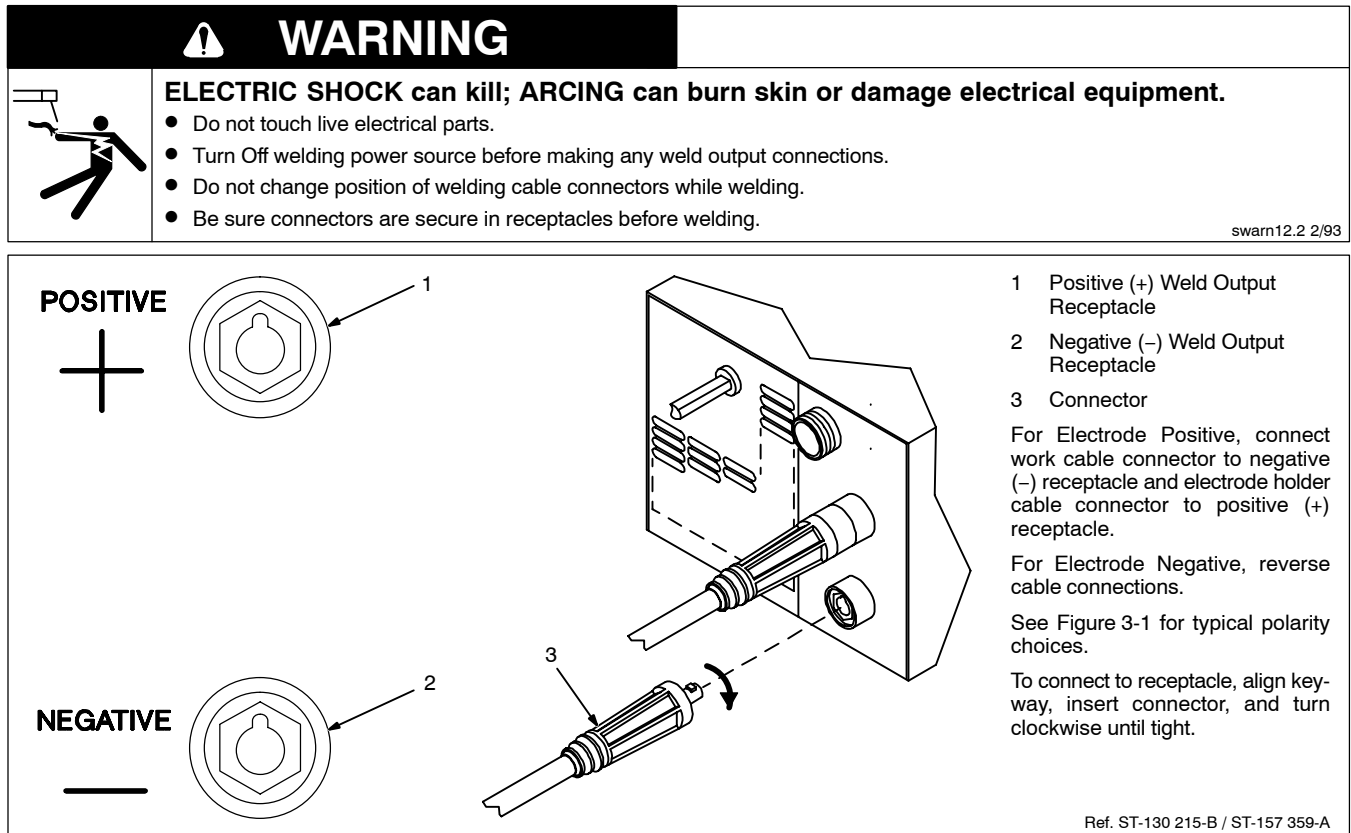


Figure 3-5. Connecting To Weld Output Receptacles

3-5. Remote 14 Receptacle Information And Connections

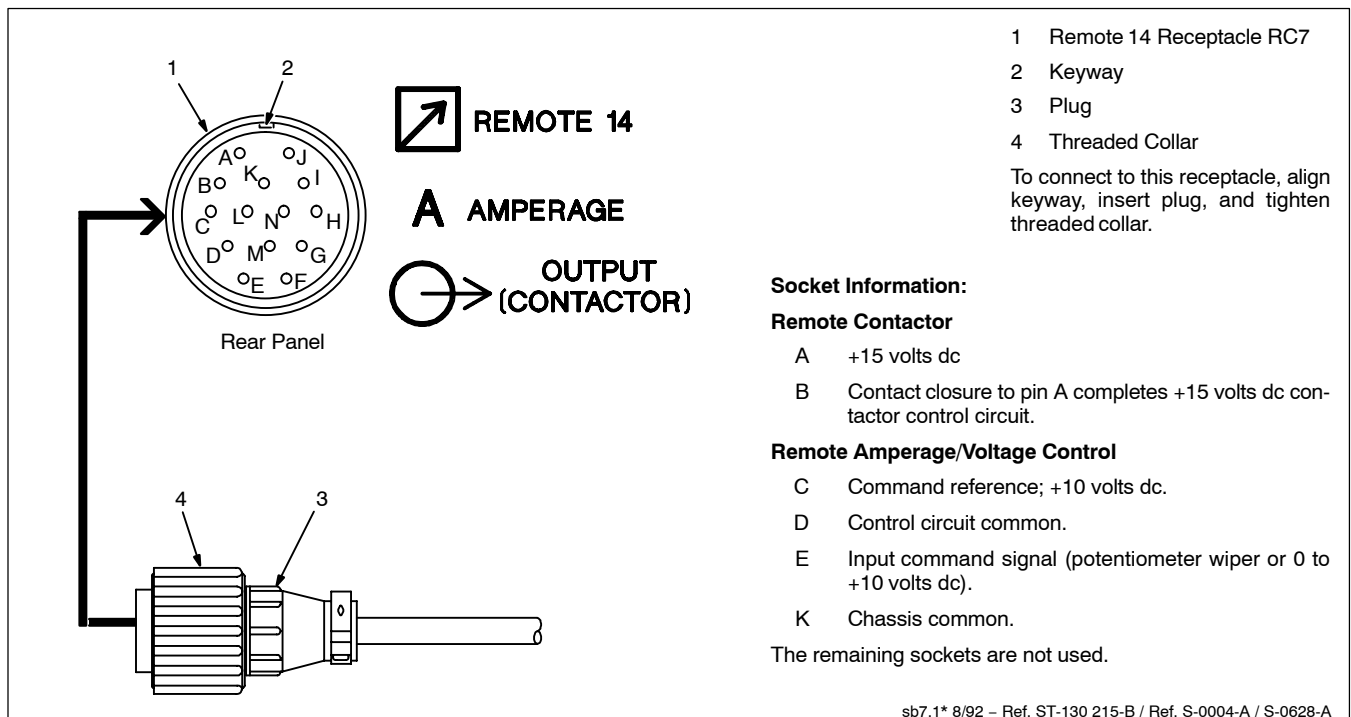


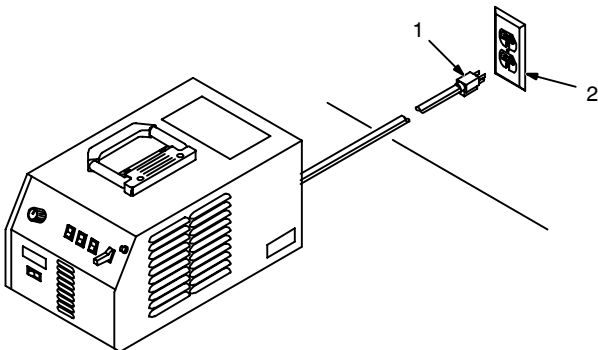


Figure 3-6. Remote 14 Connections

3-6. Connecting Input Power

| | |
|--|---|
|  WARNING | |
|  | <p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> Do not touch live electrical parts. Turn Off welding power source, and disconnect input power before inspecting or installing. Have only qualified persons install unit. Installation must meet National Electrical Code and all other codes. |

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1 115 VAC Cord/Plug
2 115 VAC Grounded Receptacle





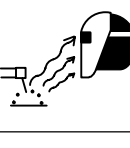


An individual branch circuit capable of carrying 25 amperes, and protected by fuses or circuit breaker is required. Recommended fuse or circuit breaker size is 40 amperes.

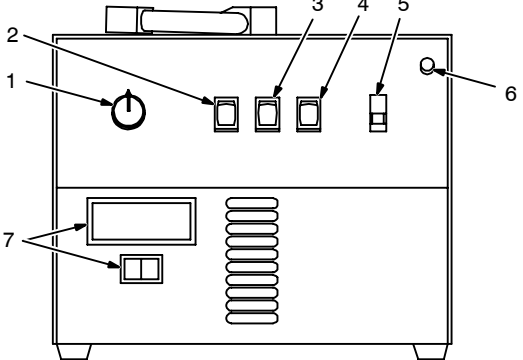
Connect input power plug to proper 115 VAC receptacle.

ST-157 357

Figure 3-7. Input Power Connections

SECTION 4 – OPERATION

| | |
|---|---|
|  WARNING | |
|  | <p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> Always wear dry insulating gloves. Insulate yourself from work and ground. Do not touch live electrical parts. Keep all panels and covers securely in place. |
|  | <p>FUMES AND GASES can be hazardous to your health.</p> <ul style="list-style-type: none"> Keep your head out of the fumes. Ventilate area, or use breathing device. Read Material Safety Data Sheets (MSDSs) and manufacturer's instructions for material used. |
|  | <p>WELDING can cause fire or explosion.</p> <ul style="list-style-type: none"> Do not weld near flammable material. Watch for fire; keep extinguisher nearby. Do not locate unit over combustible surfaces. Do not weld on closed containers. Allow work and equipment to cool before handling. |
|  | <p>ARC RAYS can burn eyes and skin; NOISE can damage hearing.</p> <ul style="list-style-type: none"> Wear welding helmet with correct shade of filter. Wear correct eye, ear, and body protection. |
|  | <p>MOVING PARTS can cause injury.</p> <ul style="list-style-type: none"> Keep away from moving parts. Keep all doors, panels, covers, and guards closed and securely in place. |
|  | <p>MAGNETIC FIELDS FROM HIGH CURRENTS can affect pacemaker operation.</p> <ul style="list-style-type: none"> Pacemaker wearers keep away. Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations. |
| <p>See Safety Precautions at beginning of manual for basic welding safety information.</p> <p style="text-align: right;">swarn6.1 10/91</p> | |



1 Amperage Adjustment Control
2 Amperage Control Switch
3 Output (Contactor) Switch
4 Touch Start Switch
5 Power Switch
6 Pilot Light
7 Optional Amperage/Voltage Meter And Switch

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Figure 4-1. Controls

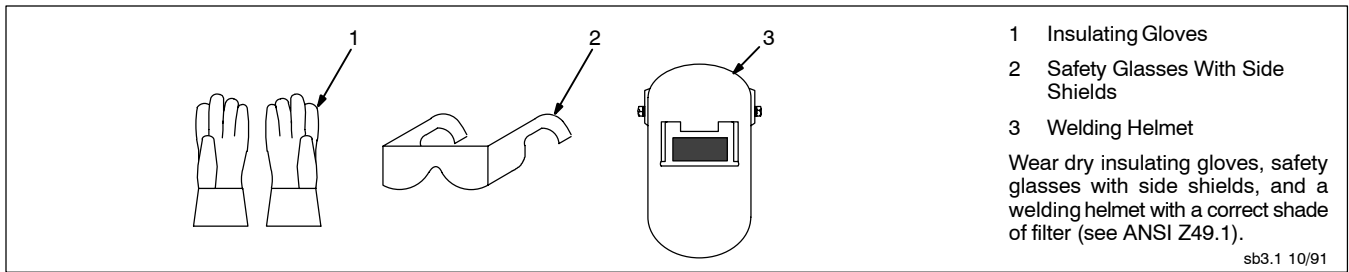


Figure 4-2. Safety Equipment

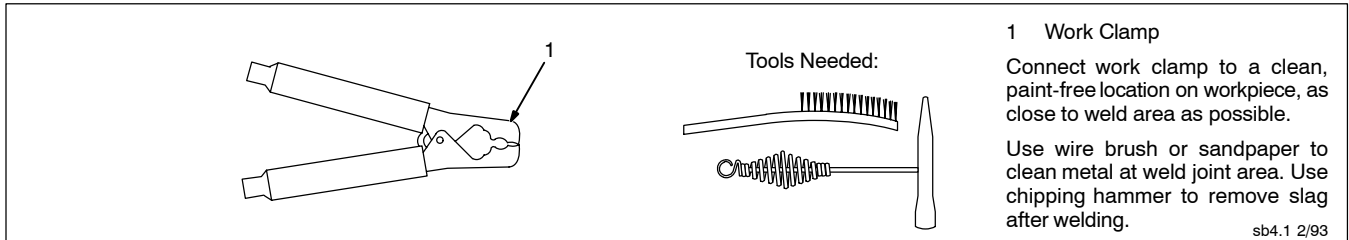


Figure 4-3. Work Clamp

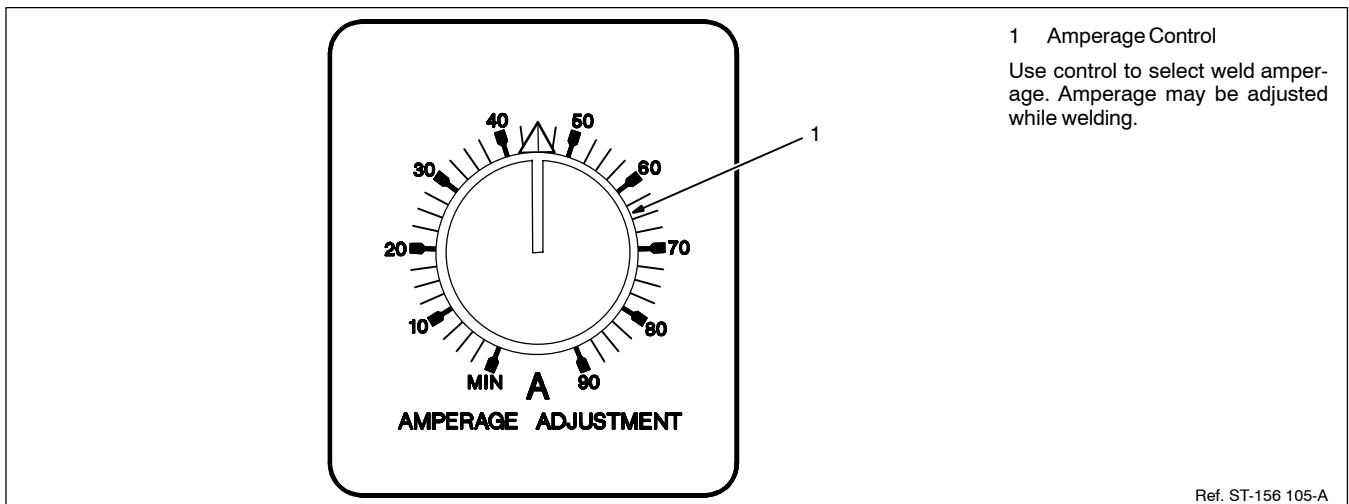


Figure 4-4. Amperage Control

⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Do not touch weld output receptacles when contactor is energized.
- Do not touch electrode and work clamp at the same time.

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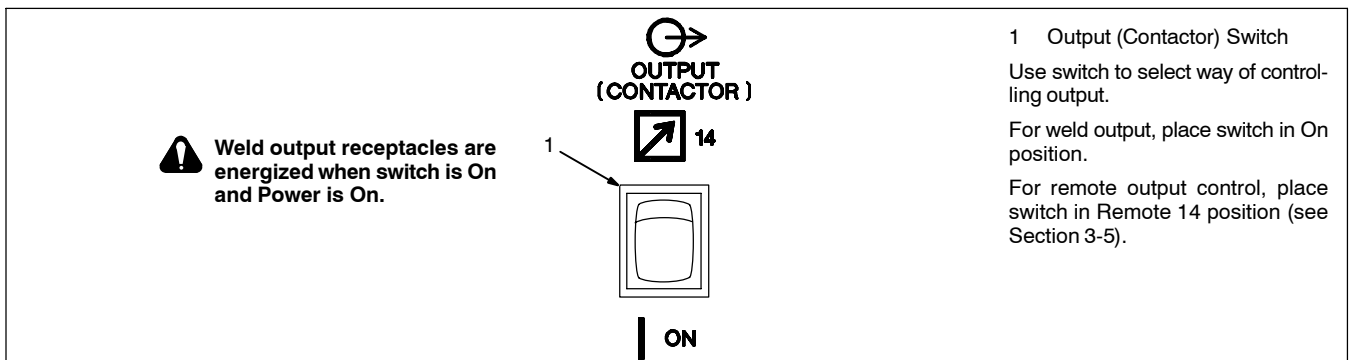
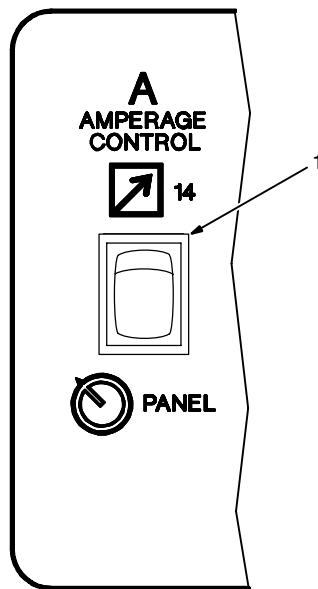


Figure 4-5. Output (Contactor) Switch



1 Amperage Control Switch

Use switch to select way of controlling amperage adjustment.

For front panel control, place switch in Panel position.

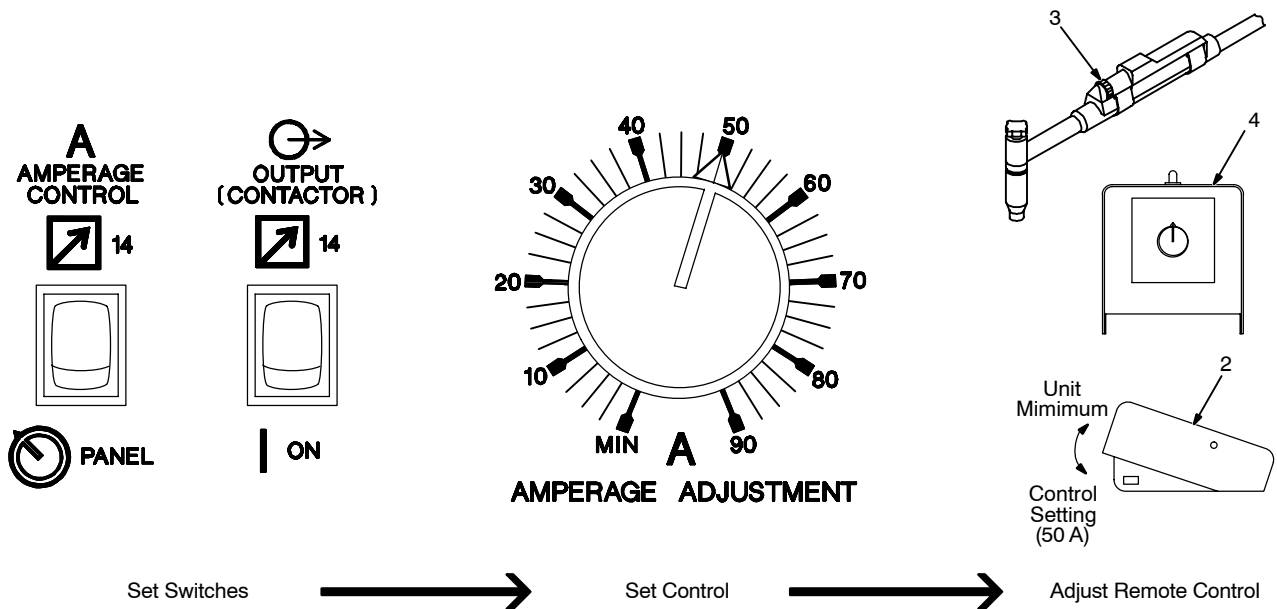
For remote control, place switch in Remote 14 position (see Section 3-5). See Example below.

2 Remote Foot Control

3 Remote Hand Dial

4 Remote Hand Control

EXAMPLE Of Combination Remote Amperage Control

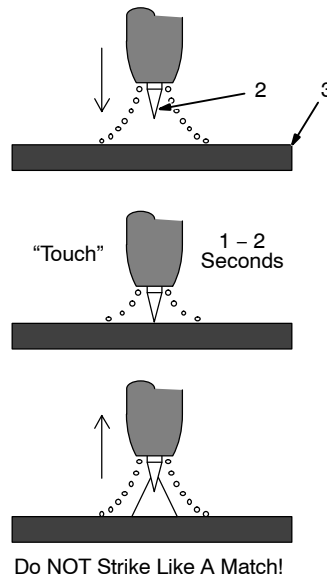
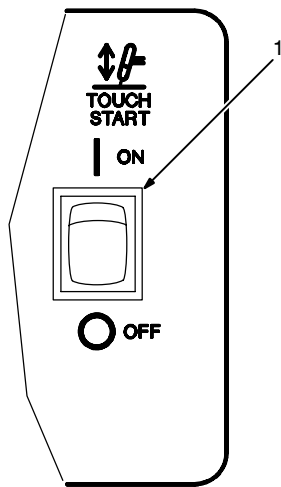


ST-159 059 / S-0769 / S-0774

Figure 4-6. Amperage Control Switch

NOTE

Touch Start switch must be in Off position when using a High-Frequency unit with this welding power source.



1 Touch Start Switch

Use switch to select touch start On or Off.

With touch start On, start an arc in GTAW welding as follows:

2 GTAW Electrode

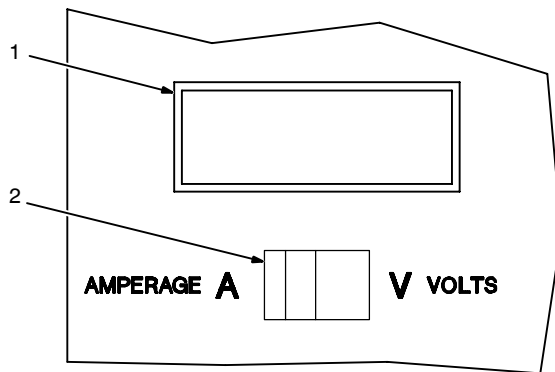
3 Workpiece

Touch tungsten electrode to workpiece at weld start point, **hold electrode to workpiece for 1-2 seconds**, and slowly lift electrode. An arc will form when electrode is lifted.

Normal open-circuit voltage is not present before tungsten electrode touches workpiece; only a low sensing voltage is present between electrode and workpiece. The solid-state output contactor does not energize until after tungsten electrode is touching workpiece. This allows electrode to touch workpiece without overheating, sticking, or getting contaminated.

Ref. S-156 279

Figure 4-7. Touch Start Switch



1 Amperage/Voltage Meter

Meter displays amperage or voltage output.

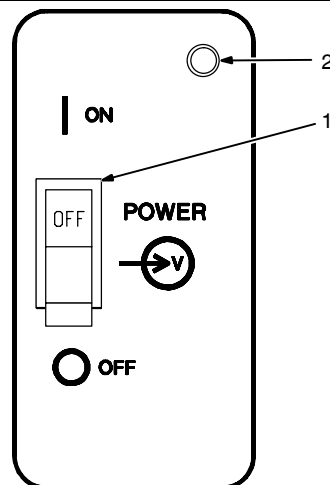
2 Meter Switch

Use switch to select amperage (A) or voltage (V) display.

In Volts position, the meter displays the voltage at the weld output receptacles. In Amperage position, the meter displays the welding current during welding, and the preset amperage when welding is not taking place.

The meter displays the actual value for 15 seconds after welding stops (see Section 5-4).

Figure 4-8. Optional Amperage/Voltage Meter And Switch



1 Power Switch

Use switch to turn unit and pilot light On and Off.

2 Pilot Light

Figure 4-9. Power Switch And Pilot Light

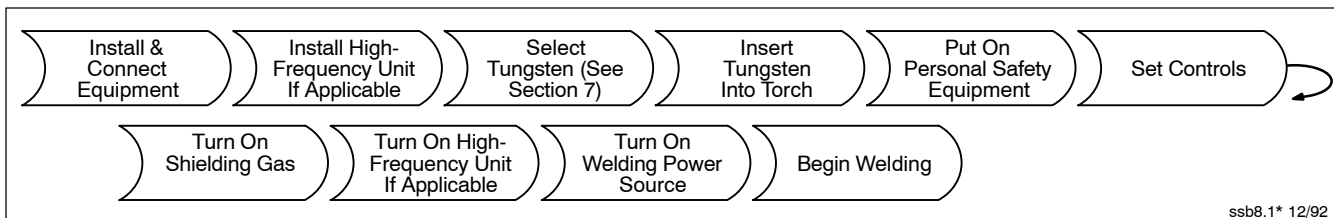


Figure 4-10. Sequence Of Gas Tungsten Arc Welding (GTAW)

SECTION 5 – MAINTENANCE & TROUBLESHOOTING

| WARNING | | | |
|--|--|--|--|
| | ELECTRIC SHOCK can kill; SIGNIFICANT DC VOLTAGE exists after removal of input power. <ul style="list-style-type: none"> Do not touch live electrical parts. Turn Off welding power source, disconnect input power, wait 60 seconds, measure voltage on input capacitors according to Section 5-2, and wait for voltage to drop to zero before touching any parts. | | MOVING PARTS can cause injury. <ul style="list-style-type: none"> Keep away from moving parts. |
| | | | STATIC ELECTRICITY can damage parts on circuit boards. <ul style="list-style-type: none"> Put on grounded wrist strap BEFORE handling boards or parts. |
| HOT PARTS can cause severe burns. <ul style="list-style-type: none"> Allow cooling period before maintaining or servicing. | | Maintenance to be performed only by qualified persons. | |

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5-1. Routine Maintenance

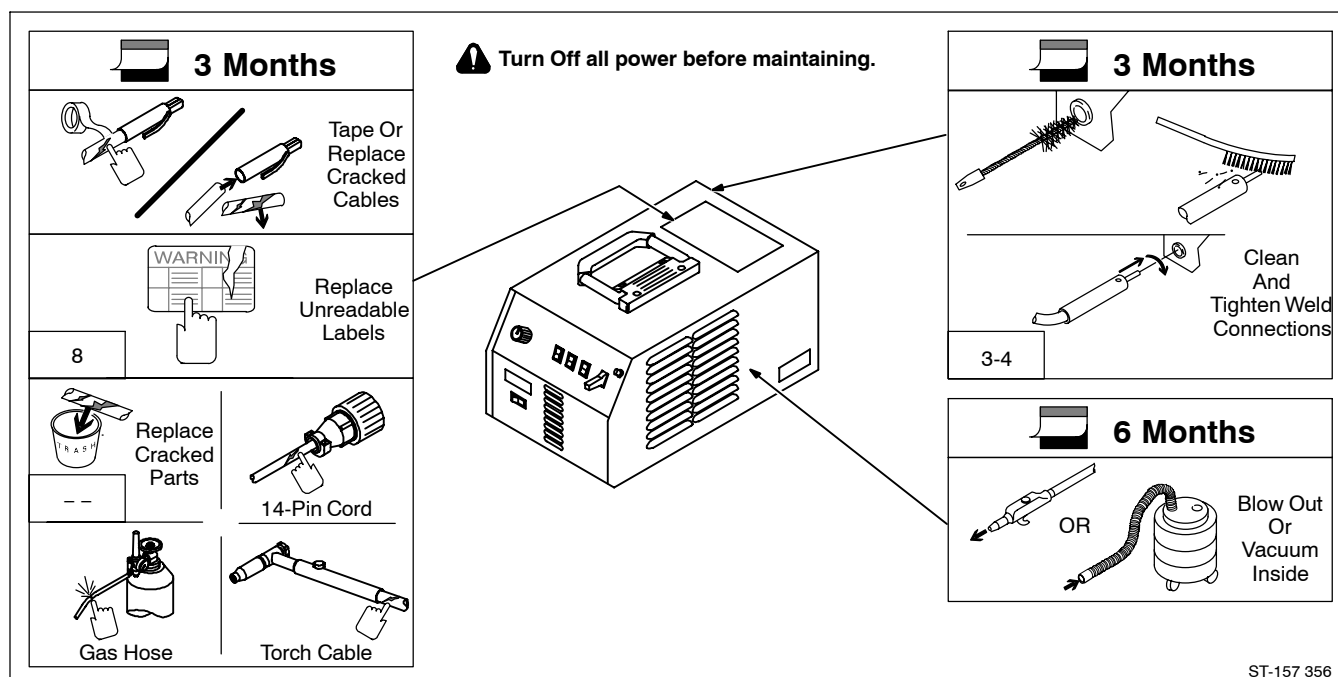


Figure 5-1. Maintenance Schedule

5-2. Measuring Input Capacitor Voltage

WARNING

READ SAFETY BLOCKS at start of Section 5 before proceeding.

⚠ Significant DC voltage can remain on capacitors after unit is Off. Always check capacitors as shown to be sure they have discharged before working on unit.

Tools Needed:
5/16 in

Turn Off welding power source and disconnect input power.
Remove wrapper.

- 1 Input Capacitor C1
- 2 Input Capacitor C2
- 3 Voltmeter

Check input capacitors as shown.

Measure the dc voltage across the positive (+) and negative (-) terminals every 30 seconds until voltage drops to 0 (zero) volts.

Proceed with job inside unit.
Reinstall wrapper when finished.

Ref. ST-157 355-A

Figure 5-2. Measuring Input Capacitor Voltage

5-3. Overload Protection

Thermostat TP1 protects the unit from damage due to overheating. If the unit gets too hot, TP1 opens and weld output stops. The pilot light stays on, and the fan keeps running to cool the unit. Wait several minutes before trying to weld.

5-4. Changing Amperage/Voltage Meter Hold Function

WARNING

READ SAFETY BLOCKS at start of Section 5 before proceeding.

The Amperage/Voltage meter is able to hold the displayed weld output value for 15 seconds after welding stops. If the hold function is not used, the displayed value leaves when welding stops.

This procedure allows the hold function to be turned On or Off.

Turn Off welding power source, disconnect input power, and check voltage on input capacitors according to Section 5-2 before proceeding.

Remove wrapper.

- 1 A/V Meter Board PC3
- 2 DIP Switch S2
- 3 Toggle 1
- 4 Toggle 2

Set toggles in desired position.
Reinstall wrapper.

Left Side





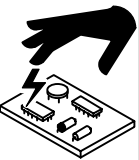
Tools Needed:
Screwdriver

| | | |
|---------------|-----|-----|
| 1 | ON | OFF |
| 2 | OFF | ON |
| Hold Not Used | | |
| 1 | OFF | ON |
| 2 | ON | OFF |
| Hold Used | | |

Ref. ST-157 355-A

Figure 5-3. Changing Amperage/Voltage Meter Hold Function

5-5. Troubleshooting

|  WARNING | | | |
|--|---|---|--|
|  | ELECTRIC SHOCK can kill; SIGNIFICANT DC VOLTAGE exists after removal of input power. <ul style="list-style-type: none"> Do not touch live electrical parts. Turn Off welding power source, disconnect input power, wait 60 seconds, measure voltage on input capacitors according to Section 5-2, and wait for voltage to drop to zero before inspecting, maintaining, or servicing. |  | MOVING PARTS can cause injury. <ul style="list-style-type: none"> Keep away from moving parts. |
| |  |  | STATIC ELECTRICITY can damage parts on circuit boards. <ul style="list-style-type: none"> Put on grounded wrist strap BEFORE handling boards or parts. |
| | | Troubleshooting to be performed only by qualified persons. | |

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Table 5-1. Welding Trouble

| Trouble | Remedy | Section |
|---|---|---------------|
| No weld output; unit completely inoperative. | Secure power cord plug in receptacle. | 3-6 |
| | Replace line fuse(s) or reset circuit breaker if open. | 3-6 |
| | Check for proper input power connections. | 3-6 |
| | Check Power switch S1 and replace if needed. | -- |
| No weld output; fan motor FM running and pilot light on. | Check position of Output (Contactor) switch S3. | Figure 4-5 |
| | Unit overheated. Allow unit to cool with fan On. | 5-3 |
| Low weld output with no control. | Check position of Amperage Control switch S4. | Figure 4-6 |
| | Have Factory Authorized Service station check control board PC1. | -- |
| Limited output and low open-circuit voltage. | Check incoming power for correct voltage. Replace line fuse if open. | 3-6 |
| | Check for proper input and output connections. | 3-3, 3-4, 3-6 |
| Erratic or improper weld output. | Tighten all welding cable connections. | 3-3, 3-4 |
| | Check for proper size and type of cable. | 3-3 |
| | Check for proper input and output connections. | 3-3, 3-4, 3-6 |
| | Replace electrode. | -- |
| Arc not forming when using Touch Start. | Check electrode and workpiece, clean as needed to allow good contact. | -- |
| Fan motor does not run. | Check fan motor FM and replace if needed. | -- |
| Wandering arc; poor control of arc direction. | Reduce gas flow rate. | -- |
| | Select proper size tungsten. | NO TAG |
| | Properly prepare tungsten. | NO TAG |
| Tungsten electrode oxidizing and not remaining bright after conclusion of weld. | Shield weld zone from drafts. | -- |
| | Increase postflow time. | -- |
| | Check and tighten all gas fittings. | -- |
| | Properly prepare tungsten. | NO TAG |

SECTION 6 – ELECTRICAL DIAGRAMS

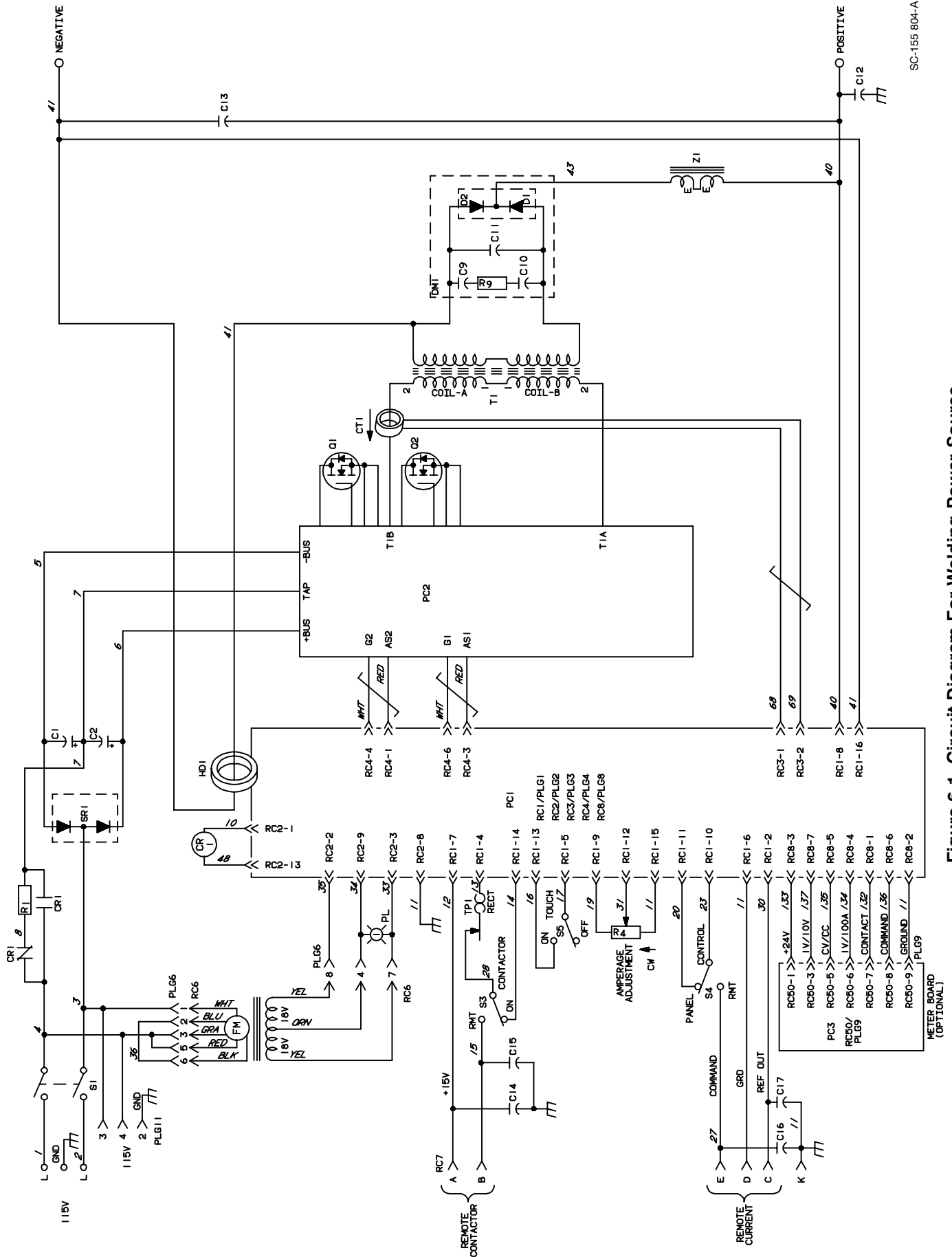


Figure 6-1. Circuit Diagram For Welding Power Source

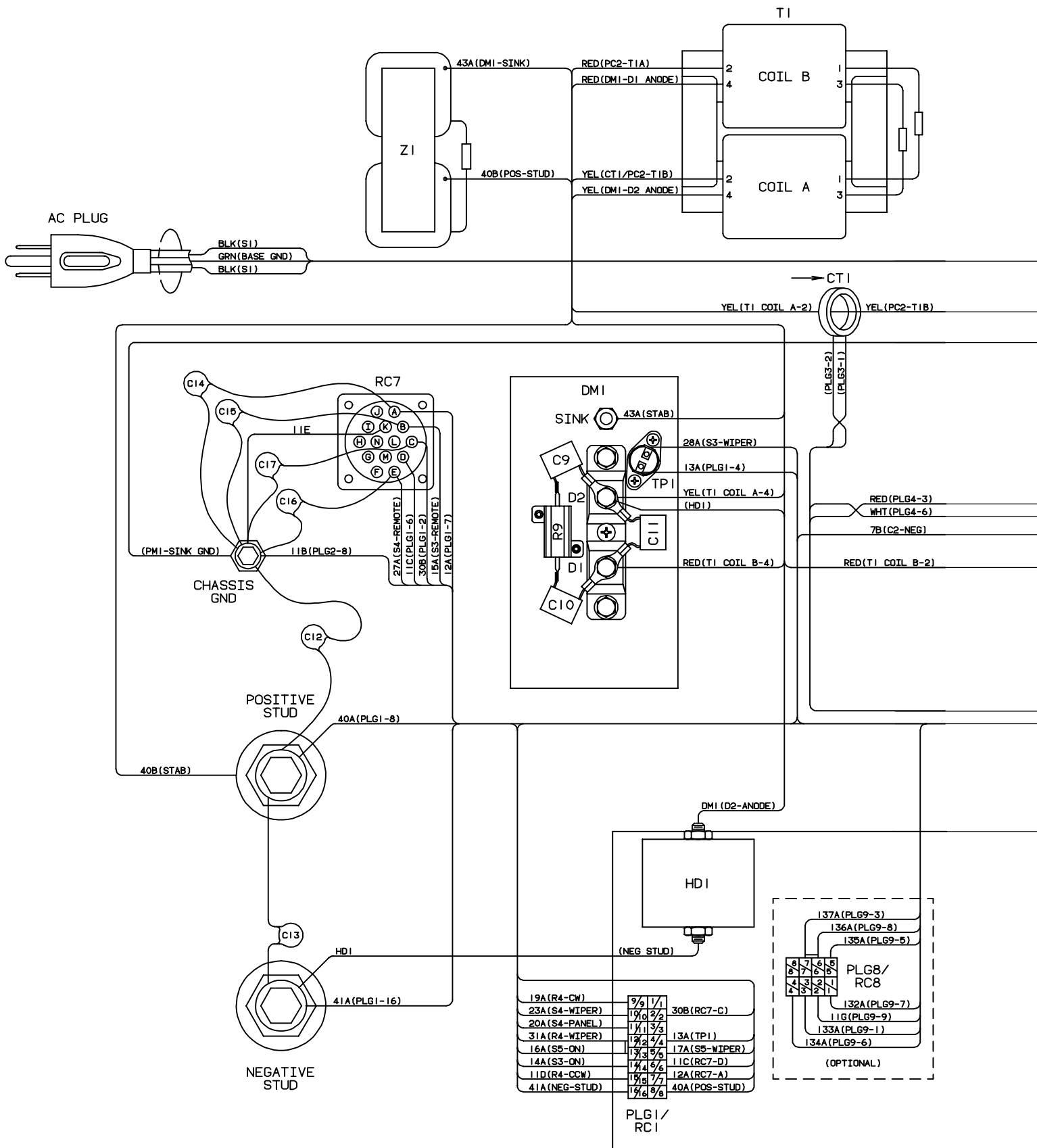
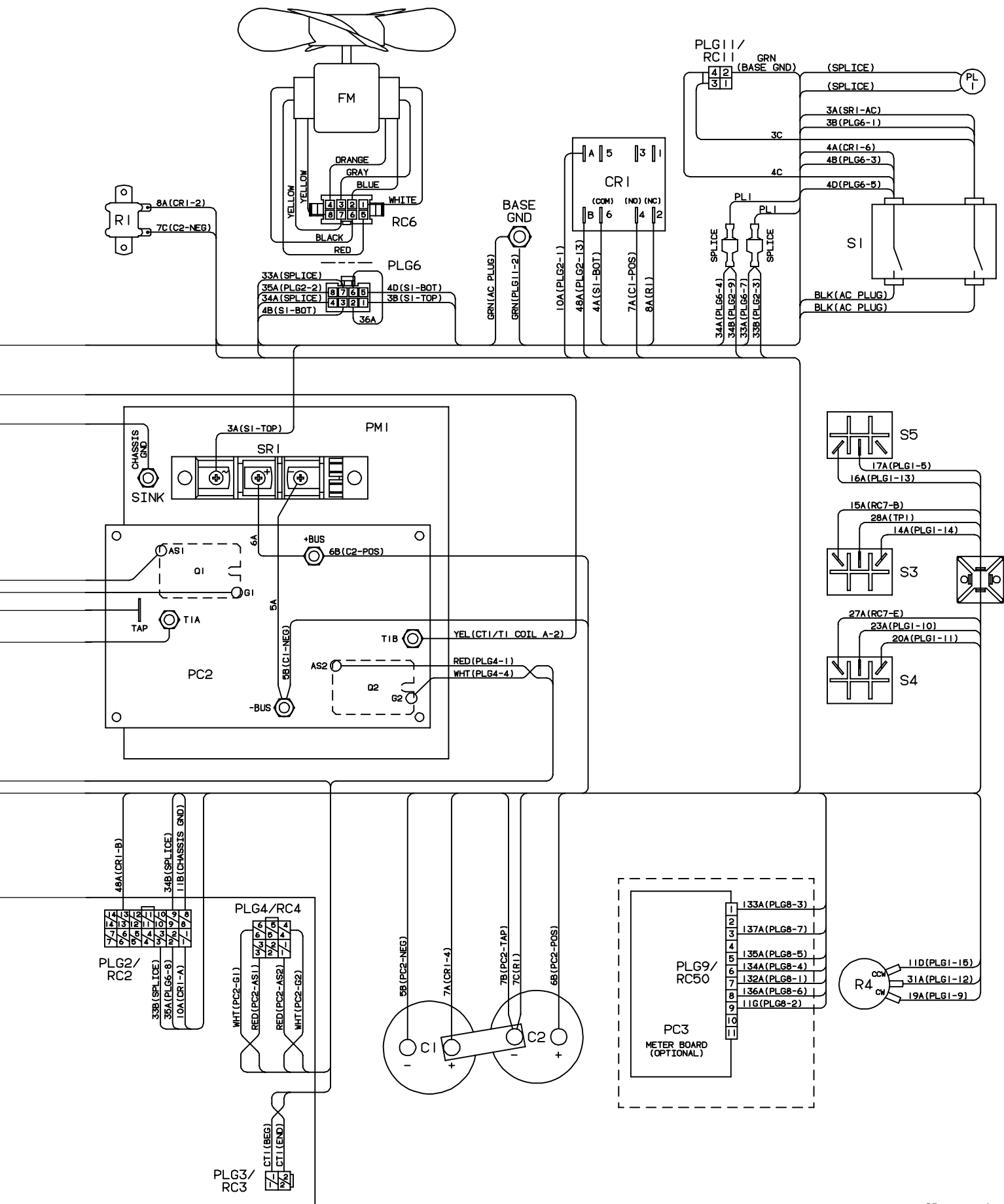


Figure 6-2. Wiring Diagram For Welding Power Source



SECTION 7 – GTAW METHODS

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NOTE

For additional information, see your distributor for a handbook on the Gas Tungsten Arc Welding (GTAW) process.

Wear clean gloves to prevent contamination of tungsten electrode.

7-1. Selecting Tungsten Electrode

Table 7-1. Tungsten Size

| Electrode Diameter | Amperage Range - Gas Type ♦ - Polarity | | | |
|--|---|--|-----------------------------------|---|
| | DC – Argon – Electrode Negative/Straight Polarity | DC – Argon – Electrode Positive/Reverse Polarity | AC – Argon – Using High Frequency | AC – Argon – Balanced Wave Using High Freq. |
| Pure Tungsten (Green Band) | | | | |
| .010" | Up to 15 | * | Up to 15 | Up to 10 |
| .020" | 5-20 | * | 5-20 | 10-20 |
| .040" | 15-80 | * | 10-60 | 20-30 |
| 1/16" | 70-150 | 10-20 | 50-100 | 30-80 |
| 3/32" | 125-225 | 15-30 | 100-160 | 60-130 |
| 1/8" | 225-360 | 25-40 | 150-210 | 100-180 |
| 5/32" | 360-450 | 40-55 | 200-275 | 160-240 |
| 3/16" | 450-720 | 55-80 | 250-350 | 190-300 |
| 1/4" | 720-950 | 80-125 | 325-450 | 250-400 |
| 2% Thorium Alloyed Tungsten (Red Band) | | | | |
| .010" | Up to 25 | * | Up to 20 | Up to 15 |
| .020" | 15-40 | * | 15-35 | 5-20 |
| .040" | 25-85 | * | 20-80 | 20-60 |
| 1/16" | 50-160 | 10-20 | 50-150 | 60-120 |
| 3/32" | 135-235 | 15-30 | 130-250 | 100-180 |
| 1/8" | 250-400 | 25-40 | 225-360 | 160-250 |
| 5/32" | 400-500 | 40-55 | 300-450 | 200-320 |
| 3/16" | 500-750 | 55-80 | 400-500 | 290-390 |
| 1/4" | 750-1000 | 80-125 | 600-800 | 340-525 |
| Zirconium Alloyed Tungsten (Brown Band) | | | | |
| .010" | * | * | Up to 20 | Up to 15 |
| .020" | * | * | 15-35 | 5-20 |
| .040" | * | * | 20-80 | 20-60 |
| 1/16" | * | * | 50-150 | 60-120 |
| 3/32" | * | * | 130-250 | 100-180 |
| 1/8" | * | * | 225-360 | 160-250 |
| 5/32" | * | * | 300-450 | 200-320 |
| 3/16" | * | * | 400-550 | 290-390 |
| 1/4" | * | * | 600-800 | 340-525 |

♦ Typical argon shielding gas flow rates are 15 to 35 cfh (cubic feet per hour).

*Not Recommended.

The figures listed are intended as a guide and are a composite of recommendations from American Welding Society (AWS) and electrode manufacturers.

S-0009

7-2. Preparing Tungsten

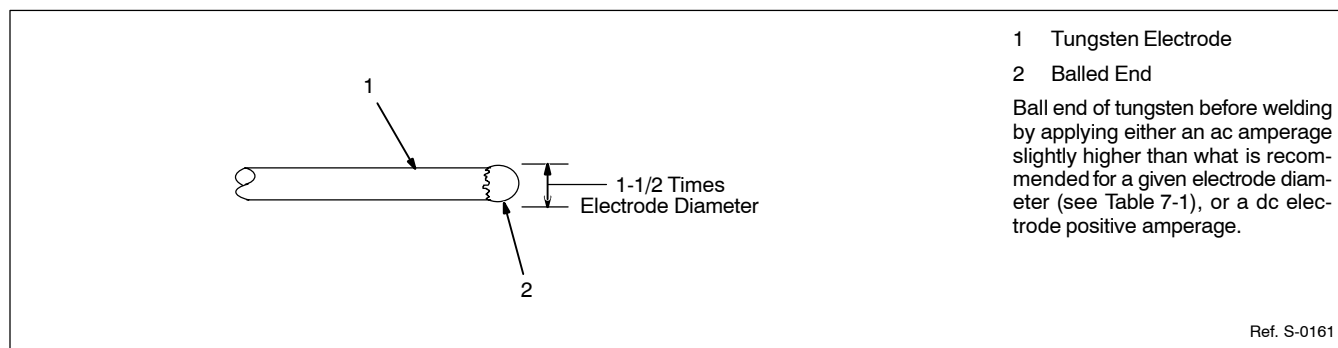


Figure 7-1. Preparing Tungsten For AC Or DC Electrode Positive (DCEP) Welding

CAUTION

FLYING SPARKS AND HOT METAL can cause injury and start fires.

- Shape tungsten electrode only on grinder with proper guards in a safe location wearing proper face, hand, and body protection.
- Keep flammables away.

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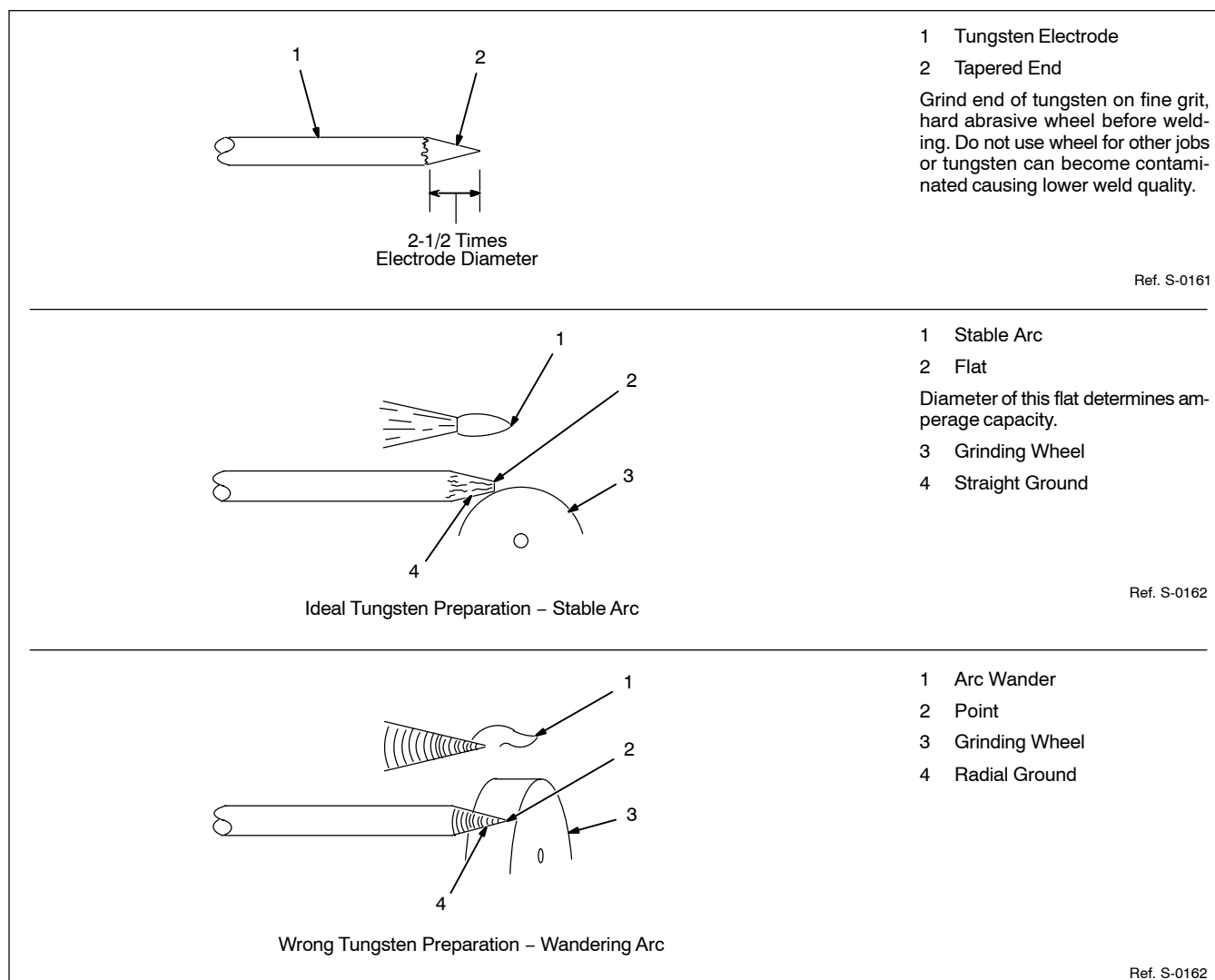


Figure 7-2. Preparing Tungsten For DC Electrode Negative (DCEN) Welding

7-3. Gas Tungsten Arc Welding (GTAW) Techniques

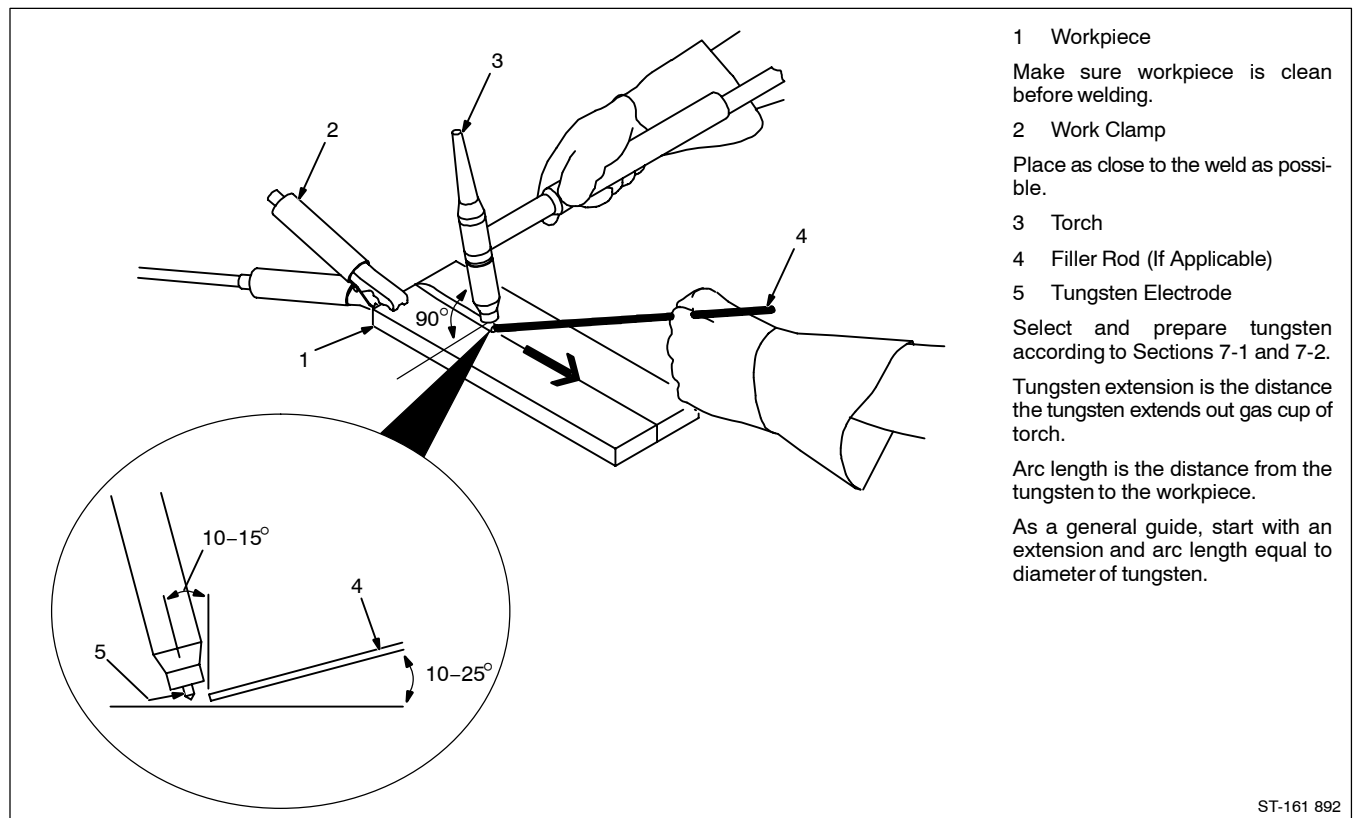


Figure 7-3. Gas Tungsten Arc Welding (GTAW) Positions

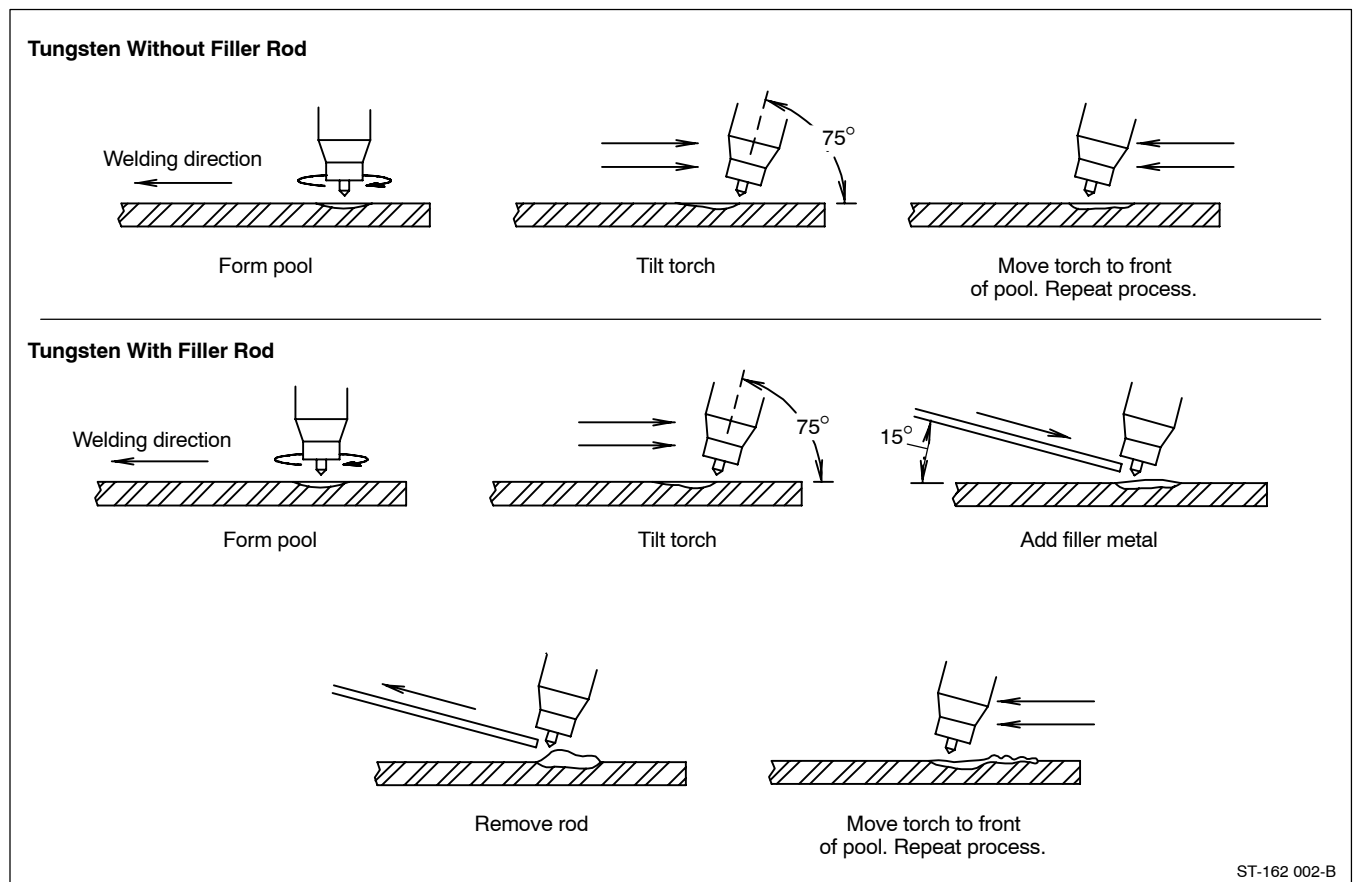
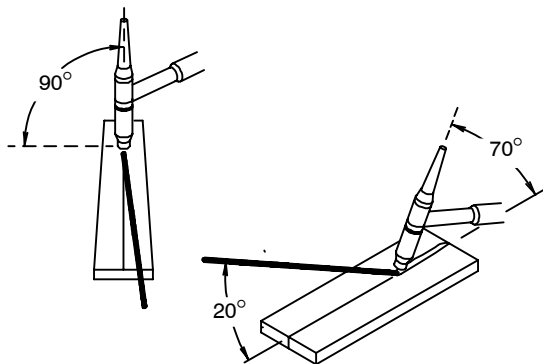


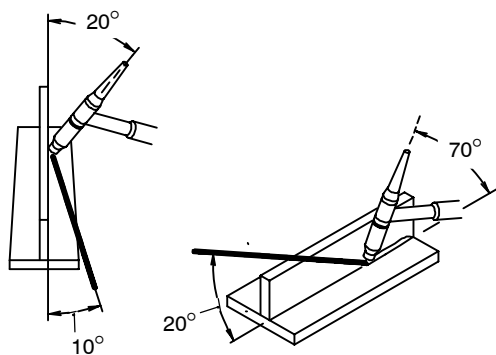
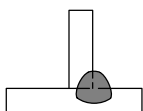
Figure 7-4. Movement During Welding

7-4. Weld Joint Positions

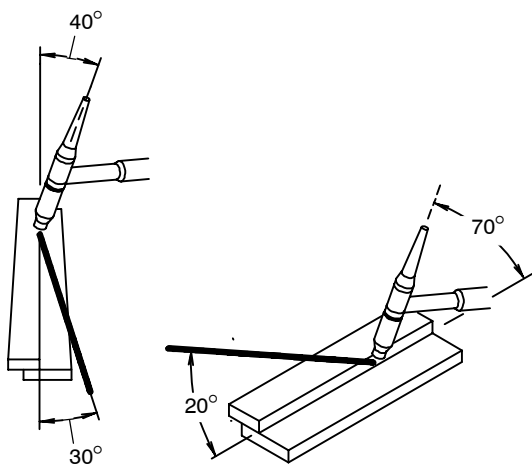
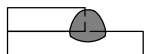
Butt Weld And Stringer Bead



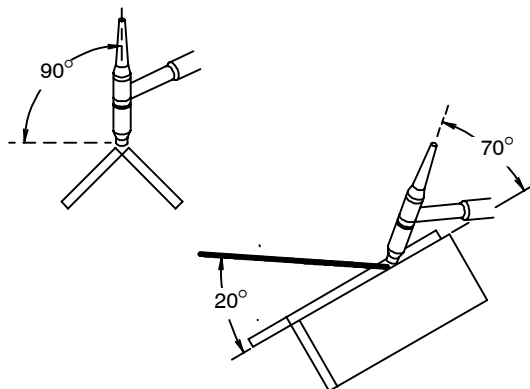
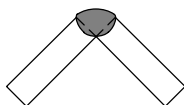
"T" Joint



Lap Joint



Corner Joint



ST-162 003 / S-0792

Figure 7-5. Weld Joint Positions

NOTES

ST-157 446



| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|----------|------------|----------|-------------|----------|
|----------|------------|----------|-------------|----------|

Figure 8-1. Main Assembly

| | | | | |
|----|----------|-----------|--|----|
| 1 | | 126 416 | HANDLE | 1 |
| 2 | | 126 415 | CLAMP, saddle | 1 |
| 3 | | 134 327 | LABEL, warning general precautionary | 1 |
| 4 | | +151 755 | WRAPPER | 1 |
| 5 | PC1 | 154 569 | CIRCUIT CARD, control | 1 |
| | PLG1 | 131 052 | CONNECTOR & SOCKETS, (consisting of) | 2 |
| | | 113 746 | CONNECTOR, rect skt 24-18ga Molex 39-00-0038 | 16 |
| | PLG2 | 131 056 | CONNECTOR & SOCKETS, (consisting of) | 1 |
| | | 113 746 | CONNECTOR, rect skt 24-18ga Molex 39-00-0038 | 14 |
| | PLG4 | ++115 093 | CONNECTOR & SOCKETS, (consisting of) | 1 |
| | | 113 746 | CONNECTOR, rect skt 24-18ga Molex 39-00-0038 | 6 |
| | PLG8 | ◆115 092 | CONNECTOR & SOCKETS, (consisting of) | 1 |
| | | 113 746 | CONNECTOR, rect skt 24-18ga Molex 39-00-0038 | 8 |
| 6 | | 141 690 | GROMMET, scr No. 8/10 panel hole .281sq .197 high | 4 |
| 7 | | 156 103 | INSULATION, PC card | 1 |
| 8 | | 156 102 | BRACKET, mtg PC card | 1 |
| 9 | | 155 836 | BAFFLE, air | 1 |
| 10 | | 128 803 | BAR, support heat sink top | 1 |
| 11 | CT1 | 155 939 | TRANSFORMER, current (consisting of) | 1 |
| 12 | PLG3 | 131 054 | CONNECTOR & SOCKETS, (consisting of) | 1 |
| | | 113 746 | CONNECTOR, rect skt 24-18ga Molex 39-00-0038 | 2 |
| 13 | | Fig 8-2 | MODULE, diode | 1 |
| 14 | | 119 943 | STRIP, polyest gl lam .187 x .500 x 6.500 | 1 |
| 15 | | 155 837 | SPACER, heat sink | 1 |
| 16 | | Fig 8-2 | MODULE, power | 1 |
| 17 | | 119 757 | BAR, support heat sink bottom | 1 |
| 18 | Neg, Pos | 129 525 | RECEPTACLE, twlk insul fem (Dinse Type) 50/70 series | 2 |
| | | 145 088 | CONNECTOR KIT, Dinse male 50 series | 2 |
| 19 | | 130 215 | PLATE, output panel rear | 1 |
| 20 | | 131 273 | CORD SET, 125V 5-15P 14ga 3/c 7ft | 1 |
| 21 | | 111 443 | BUSHING, strain relief .240/.510 ID x .875mtg hole | 1 |
| 22 | | 156 480 | CASE SECTION, bottom/rear | 1 |
| 23 | | 019 663 | MOUNT, nprn 15/16 OD | 4 |
| 24 | Z1 | 155 801 | STABILIZER | 1 |
| 25 | T1 | 156 111 | TRANSFORMER, pwr main 325V | 1 |
| 26 | | 141 422 | INSULATOR, flat pack | 1 |
| 27 | R1 | 136 076 | RESISTOR, WW fxd 30W 200 ohm | 1 |
| 28 | | 047 838 | BLANK, snap-in nyl 1.000mtg hole | 1 |
| 29 | PLG11 | 115 094 | CONNECTOR & SOCKETS, (consisting of) | 1 |
| | | 113 746 | CONNECTOR, rect skt 24-18ga Molex 39-00-0038 | 4 |
| 30 | RC11 | 115 090 | CONNECTOR & PINS, (consisting of) | 1 |
| | | 114 656 | CONNECTOR, rect pin 24-18ga Molex 39-00-0040 | 4 |
| 31 | S1 | 090 328 | SWITCH, tgl DPST 40A 600VAC | 1 |
| 32 | | 148 297 | NUT, speed U type 10-32 | 2 |
| 33 | CR1 | 106 462 | RELAY, encl 24VDC DPDT | 1 |
| 34 | | 156 479 | PANEL, front | 1 |
| 35 | PL1 | 135 199 | LIGHT, ind red lens 28V | 1 |
| 36 | | | NAMEPLATE, (order by model and serial number) | 1 |
| 37 | S3-5 | 120 376 | SWITCH, rocker SPDT 4A 250VAC | 3 |
| 38 | | 097 922 | KNOB, pointer | 1 |
| 39 | | ◆◆042 881 | METER KIT A & V DC, (consisting of) | 1 |
| 40 | PC3 | 157 587 | CIRCUIT CARD, meter | 1 |
| | PLG9 | 089 222 | CONNECTOR, rect 11skt plug 22ga Amp 1-640440-1 | 1 |
| 41 | | 133 644 | FRAME, snap-in switch rocker panel mtg | 1 |
| | | 136 339 | COVER, opening meter | 1 |
| 42 | | 136 190 | NUT, speed U type 10-32 | 4 |
| 43 | | 133 405 | NUT, speed 10-24 flat rectangular | 2 |
| 44 | R4 | 073 562 | POTENTIOMETER, C std slot 1/T 2W 10K ohm | 1 |
| 45 | | 006 426 | CLAMP, capacitor 2.000dia | 2 |

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|----------|------------|----------|-------------|----------|
|----------|------------|----------|-------------|----------|

Figure 8-1. Main Assembly

| | | | | |
|----|------|---------|--|----|
| 46 | C1,2 | 151 281 | CAPACITOR, elctlt 1600uf 400VDC | 2 |
| 47 | C12 | 135 286 | CAPACITOR | 1 |
| 48 | C13 | 135 289 | CAPACITOR | 1 |
| 49 | | 156 358 | CONNECTOR/CAPACITOR, (consisting of) | 1 |
| 50 | C14 | 156 095 | LEAD ASSEMBLY, elect | 1 |
| 50 | C15 | 141 525 | LEAD ASSEMBLY, elect | 1 |
| 50 | C16 | 141 522 | LEAD ASSEMBLY, elect | 1 |
| 50 | C17 | 156 094 | LEAD ASSEMBLY, elect | 1 |
| 51 | RC7 | 143 976 | CONNECTOR w/SOCKETS, (consisting of) | 1 |
| | | 079 534 | CONNECTOR, circ skt push-in 18-14ga Amp 66358-6 | 14 |
| | | 134 734 | CONNECTOR, circ 14 pin Amp 213571-2 | |
| | | 134 731 | CONNECTOR, circ pin push-in 18-14ga Amp 213603-1 | |
| | | 079 739 | CONNECTOR, circ clamp str rlf sz 17-20 Amp 206322-2 (or) | |
| | | 143 922 | CONNECTOR, circ clamp str rlf sz 17-20 Amp 206070-3 | |
| | | 155 748 | BUS BAR, LEM (used w/HD1 on PC1) | 1 |
| | | 156 110 | BUS BAR, capacitors (C1,2) | 1 |

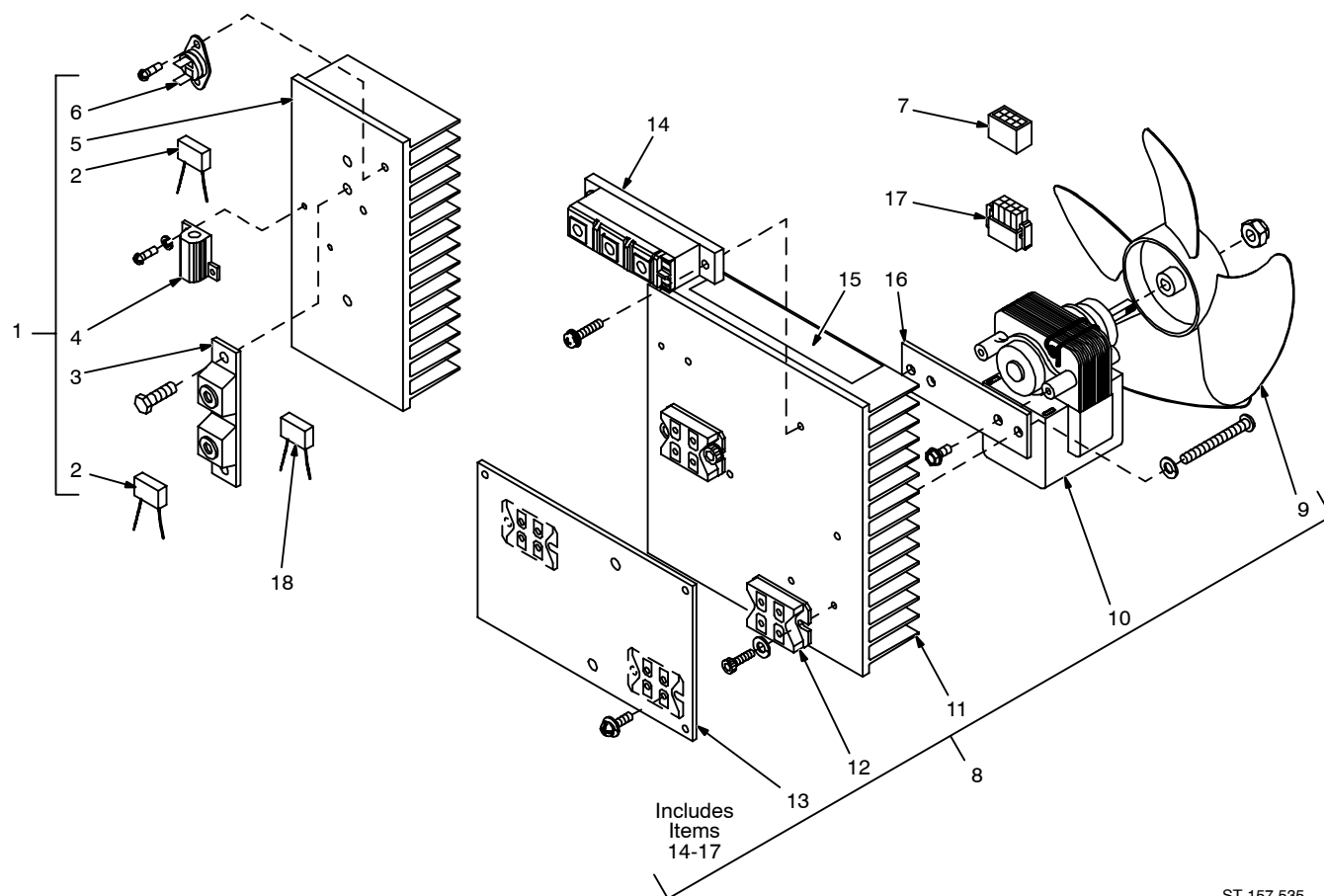
+When ordering a component originally displaying a precautionary label, the label should also be ordered.

++Included with the Interconnecting Circuit Card PC2.

◆Part of 042 881 Meter Kit Option.

◆◆OPTIONAL

BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.



ST-157 535

Figure 8-2. Module, Power & Diode

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|----------|------------|----------|-------------|----------|
|----------|------------|----------|-------------|----------|

Figure 8-2. Module, Power & Diode (Fig 8-1 Items 13 & 16)

| | | | | |
|--------|-------|----------|--|---|
| ... 1 | DM1 | 155 803 | .. MODULE, diode (consisting of) | 1 |
| ... 2 | C9,10 | 098 325 | ... CAPACITOR, polyp film .027uf 630V | 2 |
| ... 3 | D1,2 | 151 431 | ... KIT, diode ultra fast recovery | 1 |
| ... 4 | R9 | 098 324 | ... RESISTOR, WW fxd 25W 5 ohm | 1 |
| ... 5 | | 155 802 | ... HEAT SINK, diode output | 1 |
| ... 6 | TP1 | 006 334 | ... THERMOSTAT, NC | 1 |
| ... 7 | PLG10 | 115 092 | .. CONNECTOR & SOCKETS, (consisting of) | 1 |
| | | 113 746 | ... CONNECTOR, rect skt 24-18ga Molex 39-00-0038 | 8 |
| ... 8 | PM1 | 156 220 | .. MODULE, power (consisting of) | 1 |
| ... 9 | | 156 247 | ... BLADE, fan 6 in 4wg 30deg .252 bore CCW | 1 |
| ... 10 | FM | 156 246 | ... MOTOR, fan 120/230V 2600RPM w/36V sec | 1 |
| ... 11 | | +156 227 | ... HEAT SINK, module power | 1 |
| ... 12 | Q1,2 | 149 207 | ... KIT, transistor mosfet | 1 |
| ... 13 | PC2 | 155 863 | ... CIRCUIT CARD, interconnecting | 1 |
| ... 14 | SR1 | 156 367 | ... KIT, diode | 1 |
| ... 15 | | 153 178 | ... LABEL, warning exploding parts | 1 |
| ... 16 | | 146 238 | ... BRACKET, mtg fan motor | 1 |
| ... 17 | RC10 | | Included with fan motor | 1 |
| | | 010 913 | .. WASHER, flat brs .218 ID x .460 OD x .031thk | 4 |
| | | 601 835 | .. NUT, brs hex 10-32reg | 4 |
| ... 18 | C11 | 093 085 | .. CAPACITOR, polye met film .0047uf 1000V | 1 |

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

OPTIONS AND ACCESSORIES

BACKLIT LCD METER KIT

(#042 881 Factory)

(#042 614 Field)

A presettable, lighted digital display meter. Meter displays preset amperage, weld amperage, or weld voltage.

UNIVERSAL LARGE CYLINDER CART

(#042 934)

Maxstar can mount on this cart along with argon cylinder. Will accommodate 6 to 9 in. (152 to 228 mm) diameter, and 24 to 56 in. (610 to 1422 mm) high.

UNIVERSAL RUNNING GEAR/CYLINDER RACK

(#042 454)

Height: 17-1/4 in. (438 mm)
Length: 29-1/2 in. (749 mm)
Width: 14-1/4 in. (362 mm)
Accepts "R" size gas cylinders.
Shipped disassembled.

CARRYING CART

(#056 301)

Height: 34 in. (864 mm)
Width: 30 in. (762 mm)
Depth: 17 in. (432 mm)
Maxstar and Intellitig units fit nicely on this cart.

EXTENSION CORDS

For 14-Pin Remote Controls

(#122 972) 10 ft. (3 m)

(#122 973) 25 ft. (7.6 m)

(#122 974) 50 ft. (15.2 m)

(#122 975) 75 ft. (22.9 m)

RFC-14 FOOT CONTROL

(#129 339)

Heavy-duty foot current and contactor control.
20 ft. (6 m) cord and 14-pin plug.

RFC-E FOOT CONTROL

(#042 856)

Lightweight, compact foot control.
15 ft. (4.6 m) cord and 14-pin plug.

RCC-14 REMOTE CONTACTOR AND CURRENT CONTROL

(#151 086)

Fastens to TIG torch handle. Includes 28 ft. (8.5 m) cord and plug.

AMTV REMOTE CONTACTOR AND CURRENT CONTROL

(#152 608)

Fastens to TIG torch handle using velcro strips.

PC-300 PULSED GTAW (DC TIG) CONTROL

(#042 297)

The PC-300 provides two internally switchable scales.

An inverter power source can utilize the 0.5 to 20 pulses-per-second scale or the 10 to 300 pulses-per-second scale.

The PC-300 can be used with welding power sources with or without built-in high-frequency, or with external high-frequency units.

Front panel controls provide:

- Peak Amperage Adjustment
- Background Amperage Adjustment
- Pulses-Per-Second Adjustment
- Percent On-Time Adjustment
- Amperage Remote/Panel
- Output Contactor On/Off
- Pulser On/Off
- Power On/Off

A remote control receptacle is also included for use with a remote hand or foot control.

An 8 ft. (2.4 m) interconnecting cord and 115 VAC power cord are provided (115 VAC power is required).

INTERNATIONAL-STYLE CONNECTORS

Will accept Dinse™ or other International connectors.

Maxstar power sources are equipped with International-style connectors for secondary connections. (Power source is shipped with two 50 mm male International-style plugs for use with #1 or #2 AWG size cable.)

INTERNATIONAL-STYLE CONNECTOR KIT

(#042 418) 50 mm

Required if male plugs shipped with power source must be replaced or if additional plugs are needed.

Kit includes one International-style male plug, which attaches to the work and/or weld cables and plugs into the International-style receptacles on the power source.

Accepts #1 or #2 AWG size cable.

EXTENSION KIT FOR INTERNATIONAL-STYLE CABLE CONNECTORS

(#042 419) 50 mm

Used to adapt or extend weld and/or work cables.

Kit includes one male International-style plug and one in-line female International-style receptacle.

Accepts #1 or #2 AWG size cable.

INTERNATIONAL/TWECO® ADAPTER

(#042 465)

A one-piece adapter which has an International-style male plug (to power source) on one end and a female Tweco receptacle (for weld cable connection) on the other end.

INTERNATIONAL/CAM-LOK ADAPTER

(#042 466)

A one-piece adapter which has an International-style male plug (to power source) on one end and a female Cam-Lok receptacle (for weld cable connection) on the other end.

INTERNATIONAL TIG TORCH CONNECTOR KIT

(#135 492) 80 Amp Torch

(#135 493) 150 Amp Torch

(#135 494) 200 Amp Torch*

(#135 495) 250/350 Amp Water-Cooled Torch

For direct connection of one-piece torches to power sources with International-style connectors.

Note: Two-piece torches do not require this connector kit. They can use one of the two International-style connectors supplied with the power source.

**May not be compatible with competitive brand torches.*

OPTIONS AND ACCESSORIES

For Total TIG™ system, select one each of the following items:

- Welding power source
- TIG torch (recommended torches listed below)
- TIG kit (see kits listed below)
- Remote control (optional)
- Snap Start™ (optional)

TIG TORCHES AND CONNECTING KITS

For hand-held, manual applications.

For complete information on all Miller TIG torches and accessories, see Literature Index No. TG/1.0.

Explanation of Model Description

MT = Miller torch

XX = Model number of torch

V = Gas valve in torch handle*

12 = 12-1/2 ft. (3.8 m) cable

25 = 25 ft. (7.6 m) cable

1 = One-piece, high-flex cable

80 AMP AIR-COOLED MODELS

(#116 091) MT-24-12-1

(#116 092) MT-24-25-1

Note: International Connector Kit (#135 492) must be used with the 80 Amp TIG torches listed.

KIT FOR MT-24 SERIES AIR-COOLED MODELS

(#142 413) 12-1/2 ft. (3.8 m)

length

(#142 414) 25 ft. (7.6 m) length

Kit includes:

- Hose and hardware hook-up kit (THK-2)
- Consumable accessory kit (TAK-4) - three sizes (.040 in., 1/16 in., 3/32 in.) of collets, collet bodies, cups, and 2% thoriated tungsten
- Regulator/flowmeter (HRF-2425)
- Work cable with clamp (clamp rated for 350 Amps), 12-1/2 ft. (3.8 m) or 25 ft. (7.6 m) lengths to match TIG torch length

150 AMP AIR-COOLED MODELS

(#116 107) MT-17-12-1

(#116 108) MT-17-25-1

(#116 111) MT-17V-12-1*

(#116 112) MT-17V-25-1*

Note: International Connector Kit (#135 493) must be used with the 150 Amp TIG torches listed.

KIT FOR MT-17 SERIES AIR-COOLED TIG TORCH

(#129 590) 12-1/2 ft. (3.8 m)

length

(#129 589) 25 ft. (7.6 m) length

Kit includes:

- Hose and hardware hook-up kit (THK-2)
- Consumable accessory kit (TAK-1) - one backcap and three sizes (.040 in., 1/16 in., 3/32 in.) of

collets, collet bodies, cups, and 2% thoriated tungsten

- Regulator/flowmeter (HRF-2425)
- Work cable with clamp (clamp rated for 350 Amps), 12-1/2 ft. (3.8 m) or 25 ft. (7.6 m) lengths to match TIG torch length

200 AMP AIR-COOLED MODELS

(#116 123) MT-26-12-1

(#116 124) MT-26-25-1

(#116 127) MT-26V-12-1*

(#116 128) MT-26V-25-1*

Note: International Connector Kit (#135 494) must be used with the 200 Amp TIG torches listed.

KIT FOR MT-26 SERIES AIR-COOLED TIG TORCH

(#129 588) 12-1/2 ft. (3.8 m)

length

(#129 587) 25 ft. (7.6 m) length

Kit includes:

- Hose and hardware hook-up kit (THK-2)
- Consumable accessory kit (TAK-3) - one backcap and three sizes (1/16 in., 3/32 in., 1/8 in.) of collets, collet bodies, cups, and 2% thoriated tungsten
- Regulator/flowmeter (HRF-2425)
- Work cable with clamp (clamp rated for 350 Amps), 12-1/2 ft. (3.8 m) or 25 ft. (7.6 m) lengths to match TIG torch length

**Torches with manual gas valves are recommended for use with "Touch Start". When the Maxstar™ is used with an optional Snap Start™ or Intellitig™, torches with gas valves are not recommended.*